



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

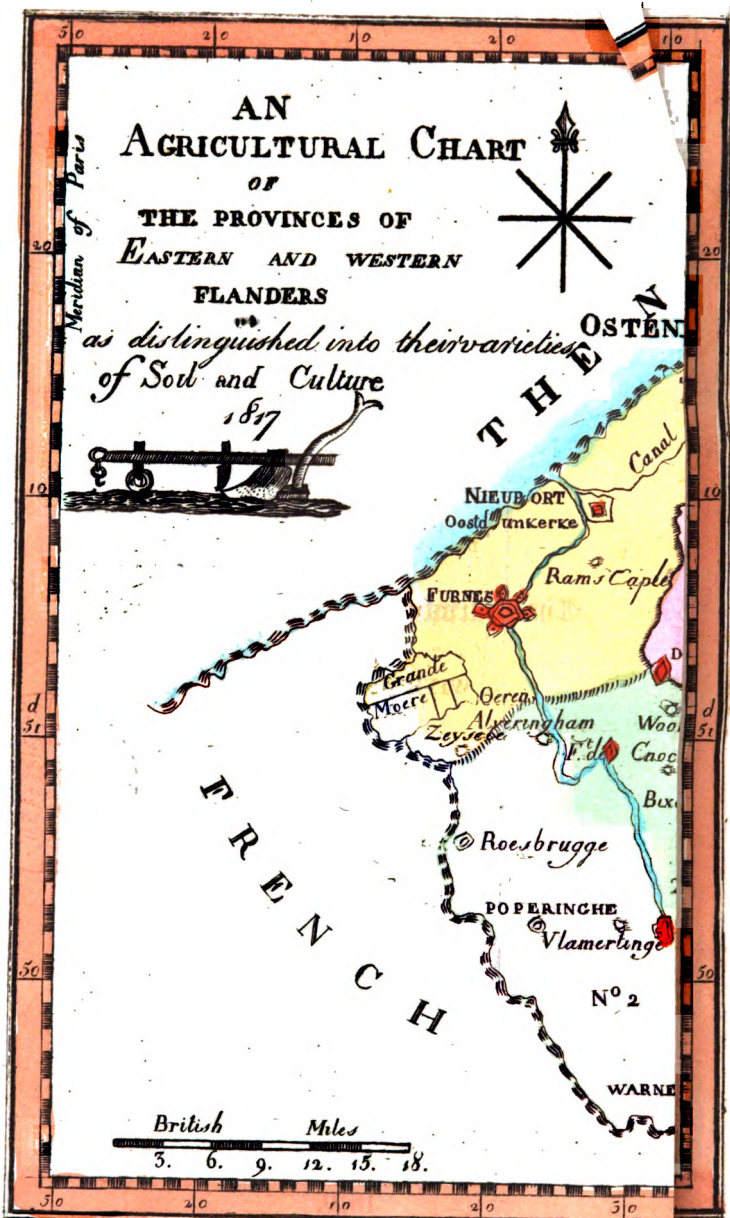
2/9

Joseph Brown Wilks
Esq

From J. G. Dalbiac August 23 1828

Keep

178



Henry. Terry Del.

Exc

A
REPORT
ON
THE AGRICULTURE
OF
EASTERN AND WESTERN
FLANDERS;

DRAWN UP AT THE DESIRE OF

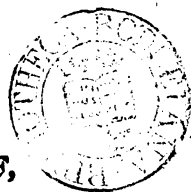
The Farming Society of Ireland.

WITH AN APPENDIX.

BY

THE REV. THOMAS RADCLIFF,

AUTHOR OF THE AGRICULTURAL SURVEYS OF THE COUNTIES OF
WICKLOW AND KERRY, &c. &c. &c.



LONDON:

PRINTED FOR JOHN HARDING, 36, ST. JAMES'S-STREET;
AND W. PORTER, GRAFTON-STREET, DUBLIN, BOOK-
SELLER TO THE FARMING SOCIETY OF IRELAND.

1819.

191. i. 157.

London: Printed by R. M^cMillan, }
Blew Street, Covent Garden. }

TO

HIS EXCELLENCY

CHARLES CHETWYND, EARL TALBOT,

LORD LIEUTENANT, GOVERNOR, AND GENERAL
GOVERNOR OF IRELAND, &c. &c. &c.

MY LORD,

THOUGH exposed to the charge of presumption, in dedicating this Work to your Excellency, it is not difficult to justify my choice of the high patronage to which I have ventured to aspire. It is intended generally for a purpose of public utility, and more especially for the benefit of a country, whose improvement and prosperity are the great objects of your Excellency's administration.

Naturally desirous to give all possible weight to observations which may perhaps be deemed important to the interests of Ireland, I cannot but be anxious to make it known,

that my humble efforts have been, in some degree, sanctioned by your Excellency's most flattering permission to place them under your protection; and that an attempt to improve our National Agriculture by the principles and practice of other countries, has not appeared altogether unworthy the attention of a Nobleman, whose extensive knowledge and practical experience have advanced the Science in one part of the Empire; whose patronage encourages and fosters it in another; and whose rank and character have dignified it in both.

I have the Honour to be,

MY LORD,

With gratitude and high respect,

Your Excellency's

Faithful, obliged, and obedient

Humble Servant,

THOMAS RADCLIFF.

PREFACE.

THE interesting outline of the Agriculture of Flanders, published by the Right Honourable Sir John Sinclair, gave rise to the present Work.

The Directors of the Farming Society of Ireland, perceiving in that, so much to attract attention, conceived that a more minute detail might be of importance, and resolving to procure it, the duty devolved upon the Author of the following Report.

Had not Sir John Sinclair's investigation been interrupted by the peculiar circumstances of the country at the time he happened to visit it, this duty might have been unnecessary, and the Public have been in possession of more useful information.

The judgment of the Directors, however, in making this inquiry, is evinced by the importance generally attached to the subject, and particularly by the interest which the Board of Agriculture in England has latterly manifested re-

specting it, in the very liberal Premiums offered for the best detail of Flemish Husbandry. That the Author of this Work (under the stipulated condition of a distant day of publication), cannot be a Candidate for the Prizes of the Board, may perhaps save him the mortification of a defeat; and if the perusal of his pages shall excite doubts, and lead to a more minute investigation of any points that may advance the great general object, he will feel pleasure in having his errors corrected, and will not regret his having been the forerunner, however defective, of abler and more accurate Agriculturists.

His Royal Highness the Archduke John of Austria, preceded the Author by a few months in a tour through Flanders, and was so fully satisfied with what he observed, as not only to note the practice, but to transport the implements into his own country.

From both, some valuable hints may be derived, worthy of notice and imitation.

To form a comparative knowledge of the products of Flanders, with those of our countries, an equalization of the weights and measures of

all, became an indispensable preliminary. To render this Report perspicuous, and to save those who may be led to a similar inspection, the trouble and difficulty which the Author experienced, a concise statement of the metrical system of France, to which the weights and measures of Flanders are referable, is given in the Appendix, accompanied by a comparative scale of English weights and measures, from which those of Scotland and Ireland may be deduced.

CONTENTS.

CHAP. I.

	PAGE
SECT. 1. Arrangement of Districts	1
2. Division No. 1.—Boundaries, Soil, general } Produce, and Rotations	2
3. Comparison between Drilled and Broad- } cast Beans	7
4. The Polders: Their Nature and Formation	11
5. The Polder of Snaerskerke	13

CHAP. II.

SECT. 1. Farming Circumstances of certain Situa- } tions within the Division No. 1, }	18
2. A particular Application of Spring Wheat	20
3. Lea Flax, succeeded by Rape	21
4. Practice of Steeping Wheat to prevent Smut	22
5. Experiment of a Remedy to prevent Smut ..	24

CHAP. III.

SECT. 1. Further Farming Circumstances in Division } No. 1,	26
2. Reclamation of the Great Moor	28
3. The Average Seed and Produce in Division } No. 1,	33

CHAP. IV.

SECT. 1. Division No. 2.—Boundaries, Soil, general } Produce, and Rotations	37
2. Cultivation of Flax, and Application of } Liquid Manure	39

CONTENTS.

CHAP. V.

	PAGE
SECT. 1. Division No. 3.—Boundaries, Soil, general } Produce, and Rotations	43
2. Culture and Advantages of Rape	45
3. The Urine Cistern	49
4. Force of Work Horses, and Manner of Feed- ing	53

CHAP. VI.

SECT. 1. Division No. 4.—Boundaries, Soil, general } Produce, and Rotations	56
2. Nature and advantage of a Rotation System	57
3. The Clover Crop	59
4. The manner of Saving Clover Seed	62

CHAP. VII.

SECT. 1. Division No. 5.—Boundaries, Soil, general } Produce, and Rotations	64
2. Rye, its Management and Produce	65
3. Value of Rye in the Distillery	68

CHAP. VIII.

SECT. 1. Division No. 6.—Boundaries, Soil, general } Produce, and Rotations	73
2. The Carrot Crop, its Management and Produce	74
3. Culture of Tobacco, and Management of the Crop	77
4. Culture and Management of Hops	81
5. Culture and Management of the Oilettes, or the Small Poppy	83
6. Average of Seed in Divisions 2, 3, 4, 5, 6, ..	84

CONTENTS.

xi

	PAGE
SECT. 7. Average of Produce in Divisions 2, 3, 4, 5, 6,	87
8. The kinds and quantities of Manure	90
9. Rent of Land, &c. &c.	91

CHAP. IX.

SECT. 1. Division No. 7.—Boundaries, Soil, general } Produce, and Rotations	93
2. Divisions No. 8, and No. 9.— Boundaries, } Soil, general Produce, and Rotations }	94
3. Rotations upon the best Soil	96
4. Rotations upon the inferior Soil	97
5. Turnips after Rape	100
6. Treatment of Waste Lands	101
7. Improvement of Waste Lands by Fir Seed	103
8. Attention to the Preservation of Trees	105
9. Farming Circumstances on the Western part } of Division No. 8,	108
10. Vegetables, the Kinds which are Cultivated	110

CHAP. X.

SECT. 1. Farming Circumstances in the neighbour- } hood of Gistel, Division No. 8,	113
2. Description of the Mouldebaert, and } manner of Reclaiming Wet Land }	114
3. Superiority of Drilled Beans at Westkerke..	118
4. Further Farming Circumstances near Gis- } tel, and eastward in Division No. 8, }	120
5. The Hainault Scythe	124
6. Farming Circumstances on the Verge of } Nos. 8 and 9,	128
7. Insects injurious to Trees of the Fir tribe ..	130

	PAGE
SECT. 8. Farming Circumstances at Beernhem,	132
9. Farming Circumstances in the Vicinity of } Beernhem	136
10. Management of the Flax Crop	137
11. Farming Circumstances in Division No. 9. } Culture of Spurry	139
12. The Culture and Value of Buck-wheat	141
13. Average of Seed in Divisions 7, 8, 9,	143
14. Average of Produce in Divisions 7, 8, 9, ..	145

CHAP. XI.

SECT. 1. Division No. 10.—Boundaries, Soil, general } Produce, and Rotations	147
2. Succession of Crops where the Sand pre- } dominates in Division No. 10,	149
3. Farming Circumstances of Division No. 10, } with further particulars as to the Cul- } ture of Hops	152
4. Average of Seed in Division No. 10,	156
5. Average of Seed in that part of Division } No. 10, where the Sand prevails	157
6. Average of Produce in Division No. 10, } upon the best Soil	158
7. Average Produce in that part of Division } No. 10, where the Sand prevails	159

CHAP. XII.

SECT. 1. Division No. 11.—Boundaries, general } Produce, and Rotations	162
2. Moderate application of Manure in the } Pays de Waes, Division No. 11,	165

CONTENTS.

xiii

	PAGE
SECT. 3. Preparation of the Ground by Trenching ..	166
4. Farming Circumstances of Division No. 11,	170
5. Further Farming Circumstances of Division No. 11.—Culture of Potatoes, and their introduction into Flanders	171
6. Further Farming Circumstances of Division No. 11,	174
7. Average of Seed in Division No. 11,	176
8. Average of Produce in Division No. 11, ..	177
9. Further Farming Circumstances in Division No. 11,	179

CHAP. XIII.

SECT. 1. Situation and Soil of the Island of Cadsand	182
2. Arrangement and Management of a Farm in Cadsand of 150 Arpens, (166 English Acres); Number of Ploughings, and Quantity of Manure	183
3. Preparations for the respective Crops in Cadsand, according to the different courses	185
4. Disposition of Crops upon a Farm of 150 Arpens, (166 English Acres) in Cadsand	189
5. The Number and Cost of Farm Servants and Labourers upon a Farm of 150 Arpens, (166 English Acres) in Cadsand	191
6. The Number and Kinds of Live Stock kept on a Farm of 150 Arpens, (166 English Acres) in Cadsand, and the manner of keeping them	198
7. Farm Buildings upon a Farm of 150 Arpens, (166 English Acres) in Cadsand	197

	PAGE
SECT. 8. Average produce of different Crops in Cadsand, with other Circumstances	200
9. General Circumstances respecting Cadsand, as affecting Proprietor and Occupier; with respect to Capital, right in Trees and Hedges, Menage, &c.	203
CHAP. XIV.	
SECT. 1. Live Stock of Flanders: Horned Cattle	207
2. Sheep and Swine of Flanders	209
3. The Flemish Horse	212
CHAP. XV.	
SECT. 1. The Flemish Forge	217
2. Treatment of the Foot, and Manner of Shoeing	219
CHAP. XVI.	
SECT. 1. Agricultural Circumstances, and Remarks respecting Eastern and Western Flanders generally	224
2. The Number of Ploughings generally given in the Flemish courses	225
3. Implements of Agriculture in Flanders: The Flemish Plough	227
4. The Kylauderie	230
5. Prices of Farming Implements in Flanders ..	232
6. Manures of Flanders	234
CHAP. XVII.	
SECT. 1. Further Circumstances respecting Eastern and Western Flanders generally	237
Woodlands	237

CONTENTS.

xv

	PAGE
SECT. 2. State of the Royal Forests in the Province of Western Flanders	238
Forest of Wynendale	238
3. Forest of Muncken, &c.	241
4. Scattered Wood belonging to the Govern- ment	246
5. Planting by the Sea	249
6. Beetrave, or Mangel-wurzel	251

CHAP. XVIII.

SECT. 1. The Menage of the Flemish Farmer and Labourer	254
2. Manner of Feeding Horses in different Districts	259
3. Manner of Feeding Cows in different Dis- tricts	261
4. The Answers of Mr. Van de Poes, Presi- dent of the Commission of Agriculture in South Holland, to questions of the Right Hon. Sir John Sinclair, respecting the Dairy of Mr. Van de Poes	265
5. Taxes	269
6. Culture of Madder	272
7. Analysis of Soils	274
Conclusion	280

A P P E N D I X.

No. I. French Metrical System	287
SECT. 1. Linear Measure reduced to English Feet and Inches	287

	PAGE
SECT. 2. Superficial Measure, and Mode of reducing	
Flemish Land Measure to English, } 289	
Scotch, and Irish Acres	
3. Measure of Capacity, and Mode of re-	
ducing Flemish Grain Measures to Eng-	
lish Quarters, Scotch Bolls, and Irish } 291	
Barrels	
4. Weights and mode of reducing Flemish } 293	
Weights to Avoirdupois Pounds	
5. Defects of the French System	294
6. Great Caution necessary in making a ge-	
neral change of Weights and Measures ;	
with a few Observations as to the sug-	
gested change of Weights and Measures } 295	
in Great Britain	
No. II. Form of Leases in Flanders	298
III. A New Method of Steeping Flax, with Experi-	
ments, and Reports of the Commissioners } 301	
IV. On the Culture and Manufacture of Madder	307
V. On the Culture of Woad, and Formation of	
Indigo	310
Description of the Plates, and Directions to } 325	
the Binder	
Pivot Bridge, and Description	328

REPORT
ON THE
AGRICULTURE
OF
F L A N D E R S.

CHAP. I.

SECT. I.

Arrangement of Districts.

ON arriving in the Netherlands, the Reporter was informed, that “with respect to culture, not only the English, but the French, confounded under the general name of Brabant or Flanders, all the provinces of the Low Countries, however different might be their modes of cultivation; but that in Flanders itself might best be seen, with what skill the farmer cultivates a bad soil (*un sol ingrat*), which he forces to return to him, with usury, a produce that the richest and strongest lands of the neighbouring provinces refuse to yield.”

This opinion, confirmed by high authority, determined him to confine his inspection chiefly

2 *Boundaries, Soil, Produce, and Rotations.*

to the limits of Eastern and Western Flanders, it being obvious, that in a soil of inferior quality, any apparent advantage must fairly be attributed to skilful management.

To have followed the line of districts as classed and regulated by the government, would have led to error, confusion, and reiterated statement in an Agricultural Report; to avoid which, it became necessary to form such imaginary boundaries, as might best serve to distinguish the difference of soil and varieties of culture. With this object, the annexed Map has been prepared, and in this point of view, these two provinces may be divided into eleven districts.

SECT. II.

DIVISION N^o I.—(See Map).

Boundaries, Soil, general Produce, and Rotations.

THIS division is bounded on the north by the North Sea, and on the south by the great Canal from Bruges to Ostend, until it reaches that which branches off to Nieuport. The boundary follows the line of that canal as far as Oudenbourg, and takes a southern direction to Dixmude, from whence in a straight line it crosses the Furnes canal at Ouren, and terminates at

little below Leysele. Towards the east of Bruges also, it is bounded by the new, but unfinished canal to Damme, and passing Eecloo, runs under Ertvelde, and terminates at the north-eastern point of the Pays de Waes (No. 11), including the indented space which intervenes between this line and the boundary of Holland.

This division, or district, comprises the following chief towns and villages from east to west: Eecloo, St. Laurens, Middlebourg, Damme, Dudzele, Blankenberg, Houtave, Ostend, Newport, Furnes; also the extensive tract reclaimed from the sea, called the *Grande Moere*, or Great Moor.

This district consists of the strongest and heaviest soil which Flanders possesses, and a similarity of quality prevails generally throughout, with some occasional exceptions.

It may be represented as a clay loam of a greyish colour, and yields the various produce to be expected from a strong soil; rich pasture, wheat, horse-beans, barley, and rape, considered as primary crops, and as secondary (or such as are not so generally cultivated), oats, carrots, potatoes, flax, and tares.

In this division, however, though the nature of the soil may be stated under the general description of a clay loam, yet are there of this three degrees of quality, not to be marked by regular limits, but to be found throughout the

4 *Boundaries, Soil, Produce, and Rotations.*

whole, in distinct situations. It becomes the more necessary to remark this, as the succession of crops depends on the quality of the soil; and as there are here, three different degrees of quality, so are there three different systems of rotation.

Upon the first quality the succession is as follows:

1st year, barley,	4th year, oats,
2d ditto, beans,	5th ditto, fallow.
3d ditto, wheat,	

Or perhaps it might be more regular to place the fallow at the commencement of the succession, as upon that process, and the manure which the surface then receives, the prosperity of the succeeding crops depends, there being no further application of manure upon soil of this description during the rotation.

The kind of manure used upon the fallow, is that of the farm-yard. The quantity per *mésure**, from twenty-five to thirty, two-horse cart-loads, weighing about 14 cwt. each.

For the second quality of soil, the succession is as follows:

1st year, wheat,	3d year, wheat or oats,
2d ditto, beans or tares,	4th ditto, fallow.

Here also, as on lands of the first quality,

* The average number of carts, viz. $28\frac{1}{2}$, would be about 16 tons to the English acre.

the manure is applied on the fallow in similar proportion, and not a second time during the course.

For the third quality of soil, the succession is as follows :

1st year, wheat,	3d year, wheat,
2d ditto, fallow,	4th ditto, fallow.

Where this course is pursued, manure is not applied at any period of it ; the farmers maintaining from experience, that if there be any increase of produce in consequence of manure, it is not sufficient to repay the expence.

Besides the foregoing crops, carrots, potatoes, flax, tares, and some turnips are sown ; but the extent of those crops upon the strong lands being comparatively unimportant, and merely for the consumption of the farm, they are not in general suffered to intrude upon the chief rotations ; nor are they in this district, as in others of lighter soil, taken as second crops within the same year.

Carrots, especially, are here made a first crop, and upon soil well prepared, deeply ploughed, and well manured ; in which case the return is usually about 10500 killogrammes from one *mé-
sure* of land (about $10\frac{1}{2}$ tons per English acre). As good pasture is more abundant in this, than in other districts, the same necessity does not exist for clover and other soiling crops ;

6 *Boundaries, Soil, Produce, and Rotations.*

but in some cases it is introduced upon strong lands in the following succession :

- 1st year, fallow, with manure,
- 2d ditto, potatoes,
- 3d ditto, wheat,
- 4th ditto, wheat or barley,
- 5th ditto, beans, pease, or tares,
- 6th ditto, wheat or barley,
- 7th ditto, oats and clover,
- 8th ditto, clover,
- 9th ditto, wheat.

This succession, however, is rarely practised, and is allowed by all the best farmers to be an injudicious course : that it should be practicable in any situation, yielding three or four wheat crops in nine years, is a proof that the land must be very strong and well laboured ; and also points out the efficacy of potatoes, beans, and clover, as intermediate crops. Indeed the introduction of the bean crop in the soils of the first and second degree of quality, in the regular courses, as above mentioned, is a chief feature in their melioration, which appears to be peculiarly suitable to Ireland, though little known or practised there.

A great improvement has been made in the cultivation of beans, by one gentleman in Flanders, who has introduced the row-culture, and prevailed upon his tenants to follow his example. It has, in this instance, met such fair and

accurate experiment by an intelligent practical agriculturist, as deserves notice, and should recommend it to general adoption.

SECT. III.

Comparison between Drilled and Broad-cast Beans.

MONSIEUR Auguste Weillande, of Ostend, having heard of the drill husbandry of some parts of England, and having recollected it in Switzerland (of which country he is a native), was resolved to compare it with the broad-cast method, under his own particular and precise inspection. To this experiment he dedicated 80 *ares** of land which had been manured the year before for winter barley. This piece was of equal quality, had been equally manured, and had borne an equal crop: upon 40 *ares* of it, he sowed broad-cast, in the usual way, 129 litres of beans, and from these 40 *ares* he reaped 512 sheaves, which yielded nine hectolitres of beans. Upon the other 40 *ares* he sowed, in drills of two feet interval, 86 litres, and reaped from them, after two hoeings by hand,

* The *are* is, according to the French system, the element of superficial measure, equal to 1077.0867 English square feet.—Vide Appendix, No. I.

580 sheaves, which yielded eleven hectolitres. After the beans were removed, the soil of the broad-cast part was hard, difficult to be worked, and was covered with weeds; that of the drilled part was clean, friable, and in fine tilth. The following season both moieties were sown again in the usual way with winter barley, broad-cast; the grain of which was much finer on the piece that had been drilled, than on the other, and the ground itself much freer from weeds. The return upon that which had been under the broad-cast beans the year before, was 580 sheaves of barley, yielding 17 hectolitres; and upon the other piece which had been *drilled* the year before, 675 sheaves, yielding 25 hectolitres. The Reporter has seldom had the satisfaction to record an experiment so accurately made as this, and so minutely noted. The obvious advantage of the drill method presents itself even in the technicals of the country, by the stated proportions; but to make it more impressive to an English reader, the comparative view may be thus arranged.

Beans.	Quantum of Seed.			
	On 40 Acre.	Rate per English Acre.	Per Scotch Acre.	Per Irish Acre.
Broad-cast	129 litres.	3.7068 Winchester.	4.61 firbts.	24 stone, of 14 lb. each.
Drill	86 ditto.	2.4712 ditto.	3.073 ditto.	16 ditto.
Saved by the drill	43 ditto.	1.2356 ditto.	1.537 ditto.	8 ditto.
Quantum of Produce.				
Broad-cast	9 hectolitres.	3.2309 quarters.	8.0364 bolls.	8.9717 barrels.
Drill	11 ditto.	3.9488 ditto.	9.8244 ditto.	10.9654 ditto.
Gained by the drill	2 ditto.	0.7179 ditto.	1.788 ditto.	1.9937 ditto.
Quantum of Produce.				
Second Year Barley.	17 hectolitres.	6.036 quarters.	8.0985 bolls.	10.563
On that moiety which had been sown the year before broad-cast	25 ditto.	8.8764 ditto.	11.9094 ditto.	15.5837
On that which had been drilled	8 ditto.	2.8404 ditto.	3.8109 ditto.	4.9707.
Gain on the drilled ground				
Number of Sheaves.				
First Year Beans.				
Broad-cast	512.	Second Year Barley. On the moiety which had been sown broad-cast		
Drill	580.			
		On that which had been drilled		
		580.		
		675.		

From the foregoing statement and comparative view, the superiority of the drill husbandry over the broad-cast in this instance, is strikingly obvious, not only in the saving of seed, and in the increase of produce, but in the more important circumstance of preparing the ground for the succeeding crop in such a manner, as to render that also more productive; and it is remarkable, that from this improved tilth by the drill method, the number of sheaves is not only greater, but their produce of corn also, is proportionably increased, for we perceive that the broad-cast beans of the first year produced 512 sheaves, which yielded nine hectolitres, and the drilled beans 580 sheaves, yielding eleven hectolitres; so that in the first instance it required nearly 57 sheaves to produce one hectolitre, which in the latter was the result of less than 53. In like manner, also, with respect to the barley of the second year: that part which had been under broad-cast beans the year before, produced 580 sheaves, yielding 17 hectolitres; and that which had been drilled, 675 sheaves, yielding 25 hectolitres; in the first instance 34 sheaves being required to produce one hectolitre, and in the latter but 27. So that in every point of view, the superiority of the drill husbandry is apparent, and particularly in this circumstance of not only returning more sheaves, but more corn in each sheaf, and of extending the influ-

ence of its melioration, even to the broad-cast crop of the second year*.

SECT. IV.

The Polders:

THEIR NATURE AND FORMATION.

BESIDES the three qualities of strong soil, mentioned in a preceding Section, another of still superior fertility, prevails in this district in considerable extent, known by the denomination of **Polders**.

The Polders are certain areas of land reclaimed from the sea by embankment, whose surface, once secured from the influx of the tide, becomes the most productive soil, without requiring the assistance of any description of manure.

They owe their origin partly to the collection of sand in the small branches of rivers, gradually increasing, so as naturally to embank a portion of land, and convert it into an arable and fertile soil.

They also have proceeded from the contraction of the river itself, which, by the effect of

* The foregoing experiment was not made within the Division now under consideration, nor can the produce stated be considered as any criterion of a general average, the soil having been naturally of an unproductive quality, improved by a process which shall be noticed in its proper place.

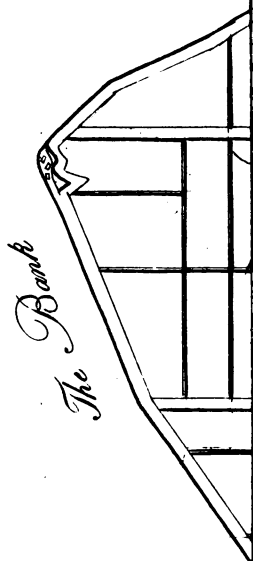
the tides, is diminished in one place, whilst an alluvial soil is formed in another by its overflow. Hence it is, that within a century, entire Polders in certain situations, have been inundated, whilst, in others, new and fertile land has appeared, as if from the bosom of the water. These operations of nature pointed out facilities many centuries back, which excited the industry of the Low Countries, and has been rewarded by the acquisition of their richest soil.

These newly-formed lands, before their embankment, are called *schorres*. They are flooded at every tide by the water of the sea, and are augmented by mire, bits of wood, rushes, seaweeds, and other marine plants decayed and putrid, also by shells and fishy particles which the ebb always leaves behind in considerable quantity. This growing soil soon produces various plants and grasses, and improves daily. When such lands have acquired a crust or surface of black earth, three or four inches deep, they may be embanked and fallowed. Those are always the most productive which have been deepened in their soil by the augmentations of the sea; and experience proves, that in the corners and hollows where, from an obstructing boundary, the greatest quantity of mire has been deposited, the soil is doubly rich and good, and cannot be impoverished by the crops of many years.

In some instances, the embankments are made

II

Polder



A The creek by which the Interior had been rendered unproductive.

B B The space where the is formed.

*Sketch of
acres and*

on the part of government, in others, by companies or individuals, under a grant of a specific tenure, (generally 21 years), rent-free, or according to circumstances, at some moderate annual payment.

SECT. V.

Polder of Snaerskerke.

IN the district at present under our view, the Polder of Snaerskerke, (as described in the annexed plate), with an additional tract, has been of late formation, and comprises about 4000 English acres.

By the order of Buonaparte, who, at the suggestion of a respectable inhabitant of Ostend, personally investigated the feasibility of the improvement, these Polders have within these ten years been brought into a state of cultivation. That which the map describes, contains about 1800 English acres. The Creek, with its minor branches, by which the tide overspread nearly the entire surface, is traced, to point out its original state; but that has now given way to the regular divisions and arrangements marked by the parallel lines which describe its present circumstances and appearance. The facility of this improvement is so obvious, that it is only surprising it should have remained so long un-

executed: the banks of more ancient Polders which nearly surrounded this, having rendered it unnecessary to do more than to shut out the sea at one point of influx, about 1450 feet in extent. This has been completed for the sum of 20,000 guilders, (about 18*l.* 10*s.* by the English perch). The bank is fifteen feet in height, thirty feet in the base, and ten feet across the top: the land which has been reclaimed by it, was let for a sheep pasturage at 600 francs (25*l.* English) per annum, and was thrown up by the farmer as untenable. Upon being dried by this summary improvement, the lots, of which there are one hundred, of thirteen English acres each, were sold by auction, at an average of 7000 francs (291*l.* 13*s.* 4*d.* English) each, and would now bring nearly double that rate.

They are let to the occupying farmers at 36 guilders the *mésure*, or about 2*l.* 15*s.* the English acre, and are now producing superior crops of rape, of sucron, (or winter barley), and beans, which constitute the usual rotation; this, however, is varied according to circumstances, as follows:

1. Oats or rape,
2. Winter barley or rape,
3. Winter barley,
4. Beans, pease, or tares.

Upon the Polders, in general, the usual produce is as follows:

Rye Seed.—Eight hoets by the *mésure*, equal to about four quarters and a half to the English, seven bolls to the Scotch, and thirteen barrels to the Irish acre.

This is nothing very remarkable, but the best return is from

Sucrion, or Winter Barley.—Eighteen hoets by the *mésure*, equal to ten quarters by the English, fifteen bolls and a half by the Scotch, and twenty-eight barrels and a half by the Irish acre.

This is indeed a famous produce, peculiar to these rich lands, which are better suited to this than to any other grain.

Beans, from the extreme richness of the soil, go too much to stalks, and produce but six hoets by the *mésure*, equal to about three quarters and a half by the English, eight bolls by the Scotch, and nine barrels by the Irish acre.

These lands require no manure, but after yielding crops for upwards of thirty years, upon any failure of produce, they are laid down to grass. By the time the artificial grass (chiefly white clover) begins to disappear, the natural grasses are established in luxuriance, and a rich pasture (which, in many instances fattens two sets of cattle in the season, at the rate of one beast to each *mésure**) continues for about twenty-five years, when, from the perforations of the moles,

* The *mésure* is 1.0938 English acre.

to the injury of the surface, and the establishment of numerous ant-hills, to the annoyance of the grazing cattle, it becomes not only convenient, but profitable to break it up; when it yields again, as formerly, the same succession of crops, for a similar space of time, and in equal luxuriance.

In this second course, however, they are obliged to have recourse to fallow, but rarely to manure, till a much more distant period: and it is considered here, that the tillage of this soil might be continued without intermission and without manure for fifty years, if the farmer had only the caution to let the crops of corn be alternated with those of a leguminous description;—but here, as in rich lands generally, the cupidity of the occupier too often overcomes his patience; and those crops which produce the most money are, notwithstanding the customary regularity of this country, sometimes resorted to in an improper succession.

In the foregoing case of two successive crops of winter barley, the practice must appear irregular, particularly as rape, which follows, is always cultivated here as a seed-crop: but many are of opinion, that though it be suffered to go to seed, yet that the great quantity of the flower which falls upon the surface, the shade of the leaves, and the dews and atmospheric influences which they attract and conduct to the soil, are

sufficient to counterbalance the exhausting effects of a seed crop, and upon this principle, it is made in many cases to intervene as one of the meliorating order.

The plate which describes the Polder of Snaerskerke, has been reduced from the map of the survey made for the arrangement of the lots by sale. It may furnish some idea of this beautiful extent of surface reclaimed, and perhaps may inspire similar exertion, where a similar facility shall happen to exist.

CHAP. II.

SECT. I.

Farming Circumstances of certain Situations within the District, No. I.

HAVING stated the varieties of soil, and of rotation in this district, some of the farming circumstances to be observed in the different parts of it, shall be noticed.

In the vicinity of the village of Damme, the soil is alluvial, abounding in marine shells, many of them perfect. The crops of potatoes, wheat, and rape, remarkably fine. This place, though not within six miles of the sea at present, was, in the twelfth century, an extensive sea-port, which accounts for the nature and richness of its soil.

In the adjoining commune of Oustkerke, a strong clay soil prevails. In this quarter of the country, the extent of farms is from fifty to two hundred English acres, and the farm-houses and offices most respectable. The cleanliness of the former could scarcely be exceeded; even the iron latches and bolts of the doors, were polished to resemble steel. A farmer of the name of

Quintens, produced a repast of eggs, bread, butter, cheese, strong beer, and coffee, at a clean table, with cloth of blue check, and diaper napkins as white as snow.

This man holds nearly two hundred English acres, one half of it meadow and rich pasture, where he fattens bullocks which have been purchased the beginning of winter, and housed till May upon straw feeding. Twenty-four of these, of different sizes, were in one house, the largest of which cost, at laying in, nine Napoleons (about 7*l.* 10*s.* British); was expected to fatten to 7½ cwt., and to sell in October, for 20 Louis (about 20*l.* British).

In addition to these, he keeps nine work-horses, and ten milch cows with their succession of heifers and calves, which manure about twenty English acres.

The general rotation here is as follows :

1. Fallow, manured,
2. Wheat, or sucron (winter barley),
3. Beans,
4. Wheat.

and occasionally varied thus :

- | | |
|---------------------|-----------|
| 1. Fallow, manured, | 3. Wheat, |
| 2. Rape, | 4. Beans. |

Sometimes, but not generally, the summer barley (*orge*) is also sown.

The produce of this land, in a fair season, is as follows:

	Hoets per Measure.	Quarters per Eng. Acre. Qrs. Bushels.	Bolls per Scotch Acre.	Barrels per Irish Acre. Barrels. Stones.
Wheat	8	4 3½	10½	11 15
Winter barley....	12	6 5½	10½	18 13
Summer barley ..	8	4 3½	7	12 9
Rape seed	9	5 —	7½	14 3
Beans	8	4 3½	10½	11 15

Of one hundred acres under the plough, fifty are sown with wheat and winter barley, twenty-five fallowed, and the remaining twenty-five occupied by beans, vetches, clover, and potatoes, which crops, with the proportion of fallow, comprise the fifty acres annually given up to wheat and winter barley.

SECT. II.

A particular Application of Spring Wheat.

THE heavy rains of the latter season having made it impossible to sow the wheat till December, and the bad weather which succeeded having injured the clay soil considerably, the growing crop made but a poor appearance.

Upon the defective crops of wheat, the farmer in the month of March was sowing and covering with the hand-hoe, the *triticum aestivum*, or spring wheat, by which means, notwithstanding

the unfavourable weather, he expected to reap a full crop in August.

It seems an important advantage in this species of grain, that, though sown even so late as April, it will ripen at the same time with the winter wheat sown the preceding October. For which purpose, or as a crop in itself, when from bad weather, or any other interruption, the winter sowing has not been accomplished, the spring wheat is esteemed of great value, but is not considered to produce as much, or of as good quality as the winter grain.

That, however, which is used by Quintens and his neighbours, is from Brabant, a white wheat, which in colour resembles the winter sort in general use ; but a red and bearded species of spring wheat has been tried in other parts of the country, with the best result, and appears to be of the same description with that imported into England and Ireland some years ago.

SECT. III.

Lea Flax, succeeded by Rape.

QUINTENS was the first farmer who introduced into that part of the country, the culture of flax upon old meadow and pasture, thus availing himself of a profitable crop to which those strong lands are, by any other mode of culture, un-

suited ; he has also contrived to procure it in the least expensive manner, as the preparation for another equally beneficial crop to succeed it in the same year. Upon one light ploughing in March, the flax is sown and harrowed in. It is pulled in July, a deep furrow is immediately given, and rape seed sown upon the single ploughing. Where soil and circumstances suit, this seems to be a most advantageous manner of commencing a course of tillage upon old and rich lea ground. As far as the flax crop, I have known it to succeed perfectly in Ireland, but except in this part of Flanders, have never heard of its being followed by rape. When a good market offers for the produce of both crops (always the case in this country), this appears to be most judicious management ; the latter crop becoming, as it were, the first of the usual course above mentioned for tillage ground, and the flax being substituted, upon one ploughing without manure, instead of a manured fallow after many ploughings.

SECT. IV.

Practice of Steeping Wheat to prevent Smut.

THE farmer above mentioned, and all others of the same quarter, pickle their wheat in salt and water, with a proportion of Roman vitriol,

by which they profess to escape all malady in the ensuing crops.

There can be no doubt of the general efficacy of this preparation, or some such solution, throughout this country, and of that particularly which contains a proportion of Roman vitriol, the good effect of which was particularly evinced in Ireland, in the practice of Mr. Lee, of the county of Wicklow, stated in the Agricultural Report of that county. A more beautiful specimen of white wheat could not be produced, than Mr. Lee had at that time in his barn, without having ever changed the seed for fourteen years.

Though aware of the usual habits of the best farmers, as to frequent change of seed (and this in Flanders is considered most essential), Mr. Lee finding none so good as his own, continued to sow it without any bad effect, and attributed his success entirely to the pickle which he had uniformly made use of.

Another remedy, or rather prevention, is steeping in lime water, with a proportion of copperas pounded, a little arsenic, and some soot and salt. Some use urine of cattle, some sea water; but their chief reliance is on a change of seed.

However successful these preventives may be generally, yet there are too many instances of failure, not to make it an object to acquire a more accurate knowledge of the diseases of the

the grain, and the means of applying the most effectual remedies.

SECT. V.

Experiment of a Remedy to prevent Smut.

A FARMER near Westcapelle, in the same district which we have been considering, has offered, for a reward, to promulgate his discovery of an unfailing method of preventing smut in wheat. The Governor of Western Flanders heard his proposal, and referred him to the Secretary of the Agricultural Society, by whose direction he is now sowing the same quality of grain, upon the same quality of soil, one moiety of the wheat unprepared, the other prepared for the prevention of the disease: all this is done under the inspection of the Mayor of the Commune, and Commissioners are appointed to examine the crop minutely before and after it shall have been reaped, in order to decide upon the failure or fulfilment of the farmer's engagement, which is, "that of the two equal compartments sown as above mentioned, the one shall be infected with smut, and the other perfectly free from it, by means of his secret application, for the discovery of which, in case the Commissioners are fully satisfied of its efficacy, he is to be amply rewarded by the Government."

This man declares, that the usual steep of salt and water does not constitute any part of his process, which probably differs also from that of the solution of Roman vitriol or copperas, so general throughout Flanders, or he would not have presented himself as a candidate for special reward.

The result of this experiment and inspection is to be communicated faithfully*.

* Since the above was written, a letter has been received from the Baron de Serret, a most able agriculturist, and Secretary to the Agricultural Society of Bruges, under whose guidance the experiment was conducted. Part of it which relates to this subject is as follows: "The directions which I gave to the farmer who professed to possess a secret for the prevention of smut in wheat, were strictly followed, and I went myself on the field assigned for the experiment, a few days before the corn was cut down, in order to inspect the result of his proceeding. The fact was, that hardly any grains, infected with smut, were discoverable in that part of the field which had been sown with prepared seed, whereas more than one half of the produce of the unprepared seed was smutty."

"On my report, our Society have entreated Government, that such reward may be offered, as will induce this farmer to disclose his secret, and we are in expectation of a favourable answer."

CHAP. III.

SECT. I.

Further Farming Circumstances in Division,
No. I.

AT Ramscapelle, between Nieuport and Furnes, a strong clay soil prevails; the cultivated part of which the farmer seems to consider independent of manure, as there appeared to be an accumulation of two years, which he was about to spread upon the pasture, at the rate of 23 loads of 15 cwt. each to the English acre. He sometimes manures for wheat (which is not an usual crop here), but always for potatoes, which are not reckoned a part of their regular succession, but cultivated as occasion best suits, with about 30 loads of farm-yard manure, of 15 cwt. each to the English acre.

The succession upon this farm is,

1. Sucrion (winter barley),
2. Beans,
3. Sucrion,
4. Beans, or vetches.

The vetches are sown in spring, the land having been ploughed in autumn, and again at seed time. They are put into the ground by the plough, and never harrowed, the strong clay forming a

surface of large and hardened lumps ; any of those which dissolve, they consider of use to the growth of the plants, and those which do not, are held to be as useful in admitting air to the bottom of the crop, and preventing its decay, if it shall be lodged ; under any other management, they would not expect the luxuriant return which they certainly have ; but as crops equally good have been produced by very different management, one cannot implicitly subscribe to their tenets in this respect. Much waste accrues from being obliged to cut the crop so high as to avoid the roughness of the surface, but they tell you that in so doing, they only leave behind that part which is least agreeable to the cattle, and which, if immediately ploughed in, is of great value to the soil.

This crop is chiefly sown for summer food, and the produce upon this farm and its vicinity, is as follows :

	Sacks of Furnes, per Measure.	Quars. on Eng. Acre.	Bolls, on Scotch Acre.	Barrels, on Irish Acre.
Sucrion, or winter barley	16	7	11½	Bar. 21 Stone. 6
Beans	6	3	7	7 15
Wheat	9	4½	10½	11 7

They rarely attempt summer barley, which, even after potatoes, falls short of the produce of the sucrion, or winter kind, by at least one-fourth. Potatoes yield per *measure* 100 sacks of

Furnes, or about ten tons per English, 13 per Scotch, and 16 per Irish acre.

The rent of this land is 12 guilders per *measure*, about 1*l.* 2*s.* per English acre.

SECT. II.

Reclamation of the Great Moor.

FROM Ramscapelle, through Furnes, to the Great Moor, is a strong rich soil, with superior crops of winter barley. The Moor itself is an object truly meriting the attention of the agricultural traveller.

The improvement of this formerly inundated marsh, exhibits the most attractive and beautiful arrangement of farms that can well be conceived, and is altogether due to the skilful and spirited exertions of Mr. Hyrwein, at present a chief proprietor; he is a most intelligent gentleman, and stated, that so far back as the year 1610, under the Spanish government, an attempt had been made to recover this extensive tract from the sea, but without success; and that since that time, similar efforts equally fruitless, had, in their failure left it, as at first, an immense lake.

It was communicated from another source, that about thirty-six years ago, this gentleman and his brother, undertook to reclaim

it, and in the course of a few years, had brought nearly 1000 hectares, about 2400 English acres, into a state of fertility and production, when, in the second year of the Republic of France, the representatives of the people, who attended the armies, took from them by their decree, all their corn and cattle, without any remuneration; the mills which they had erected for working off the water, were destroyed, by the plunder of their iron and timber, and the inundation of that part of the country, which took place in the same year during the siege of Nieuport, to an extent of 30,000 English acres, completed the ruin of those enterprising improvers, overturning their houses, annihilating their young plantations, and recommitting the entire surface to the ravages of the sea.

Such was the devastation of this flourishing establishment; and thus it remained till about fourteen years back, when the present occupier fixed himself again upon the premises, and, unsubdued by misfortune, again recommenced their cultivation, relying upon the liberality of the then existing government for assistance.

The Prefect visited the scene of his public-spirited exertions, reported the practicability and national advantage of the improvement, the arduous circumstances of the undertaking, the necessity of additional mills, and invited the Minister of the Interior to a special inspection.

He also came, was satisfied, and obtained from Government the assistance required; and this judicious application of the public funds, not only enabled Mr. Hyrwein to accomplish the valuable improvement of this extensive marsh, but also to set an example which has been followed up, to the public benefit, and to the healthfulness of that part of the country.

This marsh was seven feet below the level of the surrounding land; therefore, to drain it, the following operations became necessary:

1st, To surround the whole with a bank of eight feet in height above the level of the enclosed ground, formed by the excavation of a *fossée*, fifteen feet wide and ten feet deep, which serves to conduct the water to the navigable canal.

2d, To construct mills to throw the water over the bank into the *fossée*.

3d, To intersect the interior by numerous drains from eight to twelve feet wide, with a fall to the respective mills, to which they conduct all the rain water, and all the sokeage water which oozes through the banks.

These are the means which have been employed by Mr. Hyrwein, and which have proved effectual.

At this moment, there are within the Belgic frontier, nearly fourteen hundred English acres under the plough, and nearly seventeen hundred

under meadow and pasture ; and on the side of France, upwards of two thousand acres in pasture and under the plough, with some hundreds more embanked, but yet to be improved by draining and cultivation.

Upon the French frontier are seven mills, and on the Belgic five, for raising the water over the bank. Those which Mr. Hyrwein has in use, are of a simple but effectual construction, and are driven by wind.

The horizontal shaft above works an upright shaft, at the bottom of which a screw bucket, twenty-four feet in length, is put in motion by a bevil wheel, at such an angle as to give a perpendicular height of eight feet from the level of the interior drain to the disgoring of the water, which is emptied with great force into the exterior canal.

With full wind, each mill can discharge 150 *tonneaux* of water* every minute. The height of the building from the foundation is about 50 feet, one half of it above the level of the bank. The whole is executed in brick-work, and the entire cost 36,000 francs, about 1500*l.* British.

It is judiciously contrived that the drains, which conduct the water to the mills, constitute the divisions and subdivisions of the land, forming it into regular oblong fields of consider-

* The tonneau is 176 litres, 40 gallons English.

able extent, marked out by the lines of ozier which ornament their banks.

This now valuable tract is also intersected by roads of 30 feet wide, leading through the whole in parallel directions.

The soil which has been formed by the alluvial deposit of ages, is a clay loam, strong and rich, but not of the extraordinary fertility of the Polders, which are cropped independent of manure for so many years. The first course of crops commencing with rape, is obtained without manure, and the return for six years is abundant; the second commences and proceeds as follows:

- 1st year, fallow, with manure from farm-yard,
- 2d ditto, sucron (winter barley),
- 3d ditto, beans,
- 4th ditto, wheat,
- 5th ditto, clover,
- 6th ditto, beans and pease mixed,
- 7th ditto, oats.

This entire succession is procured from one application of manure. Some of the land first tilled is now preparing for its third course, and appears to be very free from weeds, and in excellent tilth.

Mr. Hyrwein having let all the farms which he had cultivated, has now undertaken a new speculation, by advancing still farther upon the Moor,

where he has built a farm-house and offices, and is proceeding with the hands of a master.

The rent of the farms which he has let, is from twenty to twenty-five francs per *mesure*, the average being about seventeen shillings by the English acre, producing in the whole a handsome revenue, and just remuneration for his perseverance and public-spirited exertions.

This terminates the first Agricultural Division, as marked on the prefixed map, which Division is considered as comprising almost all the strong soil of those provinces.

SECT. III.

The average Seed and Produce of Division No. I.

HAVING mentioned the specific produce of some particular farms, it becomes the more necessary to state what is considered as the general return throughout this Division, upon an average of crops, and seasons, lest an appearance of exaggeration should attach to this Report, from the statement of individual instances.

It has been seen that wheat, beans, barley, and oats, are chiefly cultivated upon this strong soil. Potatoes and flax are not grown upon a large scale, but merely for the use of the farm ;

D

and flax in this case is uniformly made to succeed potatoes. Of the primary crops, the average seed is as follows :

Wheat—214 litres by the hectare—This would be about $2\frac{1}{2}$ Winchester bushels, by the English acre—three-fourths of a boll, by the Scotch acre—about 17 stone, by the Irish acre.

Beans—344 litres by the hectare—This would be nearly 4 Winchester bushels, by the English acre—five Winchester bushels, by the Scotch acre—twenty-seven stone, of 14 lb. by the Irish acre.

Barley—214 litres by the hectare—This would be about $2\frac{1}{2}$ Winchester bushels, by the English acre—nearly half a boll, by the Scotch acre—fourteen stone and a half, by the Irish acre.

Oats—230 litres by the hectare—This would be two and five-eighths Winchester bushels, by the English acre—nine stone and a half, of 14 lb. by the Scotch acre—twelve stone one-sixth, by the Irish acre.

Average of Produce.

Wheat—2408 litres by the hectare—This would be twenty-seven five-eighths Winchester bushels, by the English acre—eight bolls three-fourths, by the Scotch acre—nine barrels and a-half, by the Irish acre.

Beans—1720 litres by the hectare—This would be nineteen three-fourths Winchester bushels, by the English acre—twenty-five Winchester bushels, by the Scotch acre—six barrels one-third, by the Irish acre.

Barley—4128 litres by the hectare—This would be forty-seven one-third Winchester bushels, by the English acre—nine bolls two-fifths, by the Scotch acre—seventeen barrels, by the Irish acre.

Oats—5160 litres by the hectare—This would be fifty-nine Winchester bushels, by the English acre—eleven bolls one-third, by the Scotch acre—nineteen and a half barrels, by the Irish acre.

In the foregoing statement, the bean crop alone is defective in its return; the cause of which, as before mentioned, appears to be the rich quality of the soil, which forces it rather to leaf than to corn, and the farmer prizes it more as a leguminous crop suited to this strong land, and preparing it for that which is to follow, than for its own intrinsic value.

Of the produce of all the other crops, the average is apparently high, but from the result of minute observation, and from the various sources from which information was derived, it appeared to be correct and fair.

The Flemish farmer knows to a square yard the contents of every plot within his holding, and proceeds by rule throughout the whole of his farming system; to which accuracy is to be attributed the equality of his produce, and the excess beyond that of our countries in the general average of Flemish crops.

As in this Division (contrary to the practice

in every other part of Flanders), the application of manure is, comparatively, very inconsiderable, suffice it to say, that the kind used, is that of the farm-yard; the mode of applying it, is upon the fallow, and the quantum, at the rate of thirty voitures of two horses, by the *mesure*, or about nineteen tons to the English acre.

In some instances, where the ground requires it, they add ten or more voitures, but this rarely.

The manure, as has been said, is uniformly applied to the fallow, which receives four ploughings either for wheat or winter barley. For wheat in any other stage, the land receives but two ploughings; for beans one; and for oats two.

Exclusive of the embanked lands or polders, which sometimes let as high as 3*l.* per English acre, the average rent of arable lands is forty francs by the hectare, about 13*s.* 6*d.* by the English acre.

The average price of labour, one franc and a half, or fifteen-pence a day.

CHAP. IV.

SECT. I.

DIVISION N° II.

Boundaries, Soil, general Produce, and Rotations.

THIS Division is bounded on the north by Dixmude and Oeren, on the east by Bixschote and Zonnebeke, and on the south and west by French Flanders. It contains the following principal places from north to south : Loo, Fort de Cnocke, Roesbrugge, Poperinghe, Vlamer-tinge, Ypres, Messines and Warneton.

The soil may be described as a good loam of a yellowish colour, mixed with some sand ; but is not in its nature as strong as that in the former Division. It is, however, of good quality, as the species of crops which it yields will testify.

Its chief produce is wheat, barley, oats, hops, tobacco, meadow, rape-seed and flax, as primary crops ; and as secondary, buck-wheat, horse-beans, turnips, potatoes, carrots, clover. This Division, unlike the former in this respect, is richly wooded.

The general course of crops in this Division is as follows :

1. Wheat upon manured fallow,
2. Clover, top-dressed with ashes,
3. Oats,
4. Turnips, } same year, without manure,
5. Flax, highly manured with urine and rape-cake.
6. Wheat,
7. Beans,

or in lieu of the last three crops, thus :

5. Fallow, manured,
6. Rye,
7. Wheat,
8. Beans, manured,
9. Wheat,
10. Oats,
11. Turnips,
12. Rye,
13. Tobacco, three times ploughed, and richly manured.
14. Wheat,
15. Hops, with abundant manure.

This last crop remains generally five years, and the ground is afterwards fit for any kind of produce.

In another part of this Division, where hops are not grown, the following rotation is observed :

1. Potatoes, with manure,
2. Wheat,

3. Beans, with manure,
 4. Rye,
 5. Wheat, with manure,
 6. Clover, top-dressed with ashes,
 7. Turnips, with manure,
 8. Flax, highly manured with urine and rape-cake,
 9. Wheat,
 10. Oats, } same year,
 11. Turnips, }
 12. Fallow, without manure,
 13. Rye,
 14. Tobacco, richly manured,
 15. Wheat.
-

SECT. II.

Cultivation of Flax, and application of Liquid Manure.

IN addition to those crops in some part of the district, particularly in the line between Woomen and Ypres, magnificent crops of rape are cultivated, and are relied on as a sure and profitable return.

Flax is also a crop upon which their best industry is bestowed, and their careful preparation of the soil is scarcely to be surpassed by that of the neatest garden. This preparation, which is practised also in Divisions III. IV. V. and VI. is as follows: the field intended for the flax,

after two or three ploughings and harrowings, is backed up in the centre, and ploughed round in but one set, so as to leave it without any furrow, The heavy roller is drawn across the ploughing by three horses, the liquid manure is then spread equally over the entire surface, and when well harrowed in by eight or nine strokes of the harrow, the seed is sown, which is also harrowed in by a light harrow with wooden pins of less than three inches, and the surface, to conclude the operation, is again carefully rolled. Nothing can exceed the smoothness and cultivated appearance of fields thus accurately prepared. The manure universally used for this crop demands particular notice—it is termed liquid manure, and consists of the urine of cattle, in which rape-cake has been dissolved, and in which the *vidanges* conveyed from the privies of the adjoining towns and villages, have also been blended.—This manure is gradually collected in subterraneous vaults of brickwork at the verge of the farm next to the main road. Those receptacles are generally forty feet long by fourteen wide, and seven or eight feet deep, and in some cases are contrived with the crown of the arch so much below the surface of the ground, as to admit the plough to work over it. An aperture is left in the side, through which the manure is received from the cart by means of a shoot or trough, and

at one end an opening is left to bring it up again, by means of a temporary pump, which delivers it either into carts or tonneaus*.

In this manner it is carried to the field, and one or other mode adopted, according to the distance. Where the *cart* plies, the manure is carried in a great sheet called a *voile*, closed at the corners by running strings, and secured to the four uprights of the cart: two men, standing one on each side of the cart, scatter it with hollow shovels upon the rolled ground;—or where the tonneaus are made use of, each is carried by two men with poles, and set down at equal intervals across the field in the line of the rolling. There are two sets of vessels, which enable the men, who deposit the loaded ones, to bring back the others empty. One man to each vessel, with a scoop, or rather a kind of bowl with a long handle, spreads the manure, so as to cover a certain space; and thus, by preserving the intervals correctly, they can precisely gauge the quantity for a given extent of surface. For the flax crop they are profuse, and of this liquid mixture in this part of the country they usually allow 400 hectolitres (in which 3000 rape-cakes have been dissolved), to the bonnier, which is at the rate

* The tonneau resembles a beer barrel, and contains 176 litres, about 38 gallons English.

of 2480 gallons beer measure to the English acre. As a similarity of practice prevails in that part of No. III. which resembles this in soil, we shall proceed to that district.

CHAP. V.

SECT. I.

DIVISION N° III.

Boundaries, Soil, general Produce, and Rotations.

THIS Division is bounded on the north by Winple, St. Eloy and Hulste; on the east, by the river Lys to Courtray; on the south by French Flanders, and on the west by a line to the east of Rousselaer and Zandvoorde. Its chief places are Courtray, Menin, Wervike, and Dazeele.

The soil of the southern part of this Division is very nearly of the same quality as that of the former; but the remaining part is more sandy. It is a Division, however, in great repute, as to its cultivation: its chief produce, wheat, flax, rye, potatoes, oats, and rape-seed. Its secondary produce, buck-wheat, turnips, clover. Its natural meadows, on the banks of the river, yield a fine quality of hay. The country is here more open; the farms larger, the plantations fewer; sufficient, however, for ornament and utility.

On the eastern side of this Division is the farm of Vollandre, belonging to a man of the name of

Bogaert, of about 200 English acres in extent, which being on a great scale for Flanders, is worthy of notice, and especially as marking the general practice of that quarter. This beautiful area of cultivation is laid out as to its crops, in parallel lines, perpendicular to a road without fence, which pervades the entire, and commands both sides for all farming purposes. The contour is that of a rich garden, the effect of industry and manure ; for the soil is such as, in our countries, we should hold in disesteem, viz. a light-grey loam strongly impregnated with sand ; yet the following crops are produced from it in the best perfection :

1. Rape, with urine and rape-cake,
2. Wheat or rye, with dung,
3. Rye and clover, without manure,
4. Clover, with ashes,
5. Wheat, with urine,
6. Turnips, with dung and urine,
7. Oats, without manure,
8. Flax, with abundant manure ;

viz. bruised rape-cake 5000 cakes to the bonnier, about 1 ton $6\frac{1}{2}$ cwt. to the English acre, or of liquid manure, (denominated *court graisse*), 400 hectolitres to the bonnier (as in No. III.), about 2480 gallons to the English acre.

SECT. II.

Culture and Advantages of Rape.

RAPE-SEED is an object of such agricultural moment in Flanders, and so well adapted to the generality of the soil of Ireland, (particularly to those parts which are as yet unreclaimed, but which, through the medium of this valuable seed, might be converted with profit, into a state of cultivation and fertility), that it was satisfactory to learn, and from so good a practical authority as this farmer, the precise value of his crop at the time of our conversation.—His produce was 40 sacks, or 50 hectolitres per bonnier, which is $14\frac{1}{2}$ hectolitres, or about five quarters to the English acre. His crop sold by the sack for 39 francs, which would be about the rate of 18*l.* 10*s.* per English acre at par.—This would be upwards of 17 barrels, of 16 stone each, to the Irish acre ; and at the same rate of sale, would amount to 29*l.* 12*s.* per acre, and about 1*l.* 14*s.* 10*d.* per barrel Irish*.

Exclusive of the manure, viz. 2000 rape-cakes and sixty-four carts of liquid manure to the bonnier, which is estimated at 19*l.* being about 5*l.* 10*s.* by the English acre, the remaining cost

* In the last two years, the barrel of rape-seed in Ireland has sold from 2*l.* to 2*l.* 10*s.*

is that of two ploughings and about 80 men employed in manuring, transplanting, weeding, earthing, pulling and threshing the crop; which by the English acre, may altogether be estimated at about 1*l.* 12*s.* The plants are valued at 10*s.*, so the account would stand thus:

	£	s.	d.
Gross amount of rape-seed, per English acre,	18	10	0
	£	s.	d.
Manure, in value,	5	10	0
Ploughing and labour,	1	12	0
Rape plants,	0	10	0
	<u>£ 7</u>	<u>12</u>	<u>0</u>
		7	12 0
Profit* per English acre,	£ 10	18	0

* It is well that the culture of this plant is beginning to extend itself in Ireland, and that ample encouragement is exhibited upon the farm of Mr. Samuel Garnett, near Kells, in the county of Meath, reclaimed by his skill and industry from an absolute marsh, and without any manure except the surface ashes, producing the most luxuriant crops. His first essay, of about eight acres, yielded 17 barrels per acre, and sold at 4*l.* 1*s.* per barrel, making 34*l.* 17*s.* per Irish acre. In the last autumn he prepared 38 acres of transplanted rape, which promised still better than that of the former year, but was not so productive, and he has now upon the same farm 45 acres for the ensuing crop, sown broad-cast, and 3 feet in height in most parts of it, in the month of November.

This reclaimed marsh had been from time immemorial inundated, except for the summer months, when it was merely

It is agreeable, in an agricultural enquiry, to bring any thing to a specific point, and this is the result of the practice upon a well-managed farm, in 1817, where manure is always dear, from the great demand, and at a time that rape-seed happened to be low ;—nevertheless, a very fair return appears, even after the payment of rent and taxes ; the rent of this farm being at the rate of 24s., and the taxes at that of 6s. 8d. by the English acre ; which leaves a net profit upon each of 9l. 7s. 4d. But the Flemish farmer is not always satisfied with the profit on the seed. Oil-mills abound in such numbers throughout this country, that he is generally the manufacturer of what is necessary for his home consumption, and not unfrequently for sale. The expences of the oil-mill in its construction and management, the proprietors make a mystery of ; but the profit must be very considerable, as is well known by the farmers who manufacture for themselves. Some establishments of this nature, formed in the reclaimable bogs and mountains of Ireland, would shortly spread the cultivation of this profitable seed, which in many places can be grown without manure, but generally on the

applicable to horses and young cattle. By taking the proper levels, and sinking the river at a considerable cost, Mr. Garnett has set a spirited example of industry, and now begins to reap the advantage of his enterprise.

burnt surface of the ground to be reclaimed ; and by its own refuse, (of cakes from which the oil has been expressed), capable of renewing the soil which has produced it, and of preparing it for other crops. In mountainous tracts, where limestone is not to be found, but where frequent mill-sites occur, it might prove an admirable succedaneum as a manure, and act as a profitable improvement in every branch of its process.

It is but seldom managed in our countries as in Flanders, but is sometimes there sown, as with us, broad-cast.—The general and approved method is, however, by transplanting, which they alledge, and apparently with great justice, to have many advantages: one, that the seed-bed occupies but a small space, whilst the land which is to carry the general crop is bearing corn. By having the plants growing, they have time to harvest their corn, to plough and manure the stubble intended for the rape, which they put in with the dibble, or the plough, from the latter end of September to the second week of November, without apprehending any miscarriage.

The seed-bed is sown in August, and even to the middle of September. In October, or sooner, the stubble is ploughed over, manured, and ploughed again. The plants are dibbled in the seams of the ploughing, (each furrow-slice being twelve inches broad), and are set out at twelve

inches distance in the rows. Instead of dibbling upon the second ploughing, in many cases they lay the plants at the proper distances across the furrow, and as the plough goes forward, the roots are covered, and a woman follows to set them a little up, and to give them a firmness in the ground, where necessary. Immediately after the frost, and again in the month of April, the intervals are weeded and hand-hoed, and the earth drawn up to the plants, which is the last operation till the harvest. It is pulled rather green; but ripens in the stack; it is thrashed without any particular management; but the application of the haulm or straw, is a matter of new and profitable discovery: it is burned for ashes, as manure, which are found to be so highly valuable beyond all other sorts which have been tried, that they bear a price as three to one above the other kinds, and it is considered, that upon clover, a dressing of one-third less of these is amply sufficient.

SECT. III.

The Urine Cistern.

THE rape-crop has been dwelt upon as one suited to our countries, and extremely prized in Flanders;—but how much more valuable to us,

whose soil demands not such abundant and expensive manure.—The urine cistern, (from which, in this district, the rape-crop is manured), is constructed to contain any given quantity, and is contracted for by the bricklayers (finding materials) at one franc (or 20 sols of France) per tonneau, of 38 gallons English. The usual capacity of the vault, as adopted on the farm of Vollandre, is for 1000 tonneaux, (cost about 45*l.* British), which quantity for the rape-crop will manure little more than two bonniers, or about seven English acres. But the cistern under the stables is nearly of double size: from this the exterior cistern is filled, and between both, the farmer can fairly count upon manuring in the best manner six bonniers, or twenty-one English acres;—or perhaps two bonniers in addition, of crops which do not require so much manure. The whole of this quantity (exclusive of farm-yard dung, ashes, composts, &c.) is produced by eight horses, and thirty-six head of cattle, housed winter and summer in well-constructed stables, increased by the adventitious aid of the rape-cake, and the *vidanges* from the privies. In a cistern of 1000 tonneaux, it is not unusual to dissolve from 2000 to 4000 rape-cakes of 2 lb. each; indeed neither industry nor expence is spared for the collection of manure, as upon that depend the produce and fer-

tility of a naturally bad soil. The farmer who fails to make those exertions, is sure to be left in the back ground.

In the immediate vicinity of this well-cultivated farm, one of a very different aspect presents itself: upon enquiring the cause, you are told of the proprietor, "*Il n'aime pas les bons-bons*"—the exulting term for their favourite manure.

The cistern is for the most part formed under the range of stables, from each stall of which the urine is conducted to a common grating, through which it descends into the vault; from thence it is taken up by a pump: in the best regulated, there is a partition in the cistern, with a valve to admit the contents of the first space into the second, to be preserved there free from the later acquisition, age adding considerably to its efficacy.

This species of manure is relied on beyond any other, upon all the light soils throughout Flanders, and even upon the strong lands (originally so rich as to preclude the necessity of manure), is now coming into great esteem, being considered applicable to most crops, and to all the varieties of soil.

May we not then press it upon the notice of farmers of the British empire?—In England and Scotland it is little known; in Ireland not at all.

Where farm-offices are to be erected, the additional cost of forming them upon vaults, and regulating the flagging or pavement, so as to supply those vaults, would be soon repaid by the advantage of the best kind of manure, which at present is universally suffered to flow away in waste. Even to offices already built, an exterior cistern might be added ; but it is essential that it should be secure from the admission of rain, or any other water.

The collection made in the winter months would be a great source of fertility ; but if once connected with a regular soiling system, the increase would embrace an infinitely wide extent.

By an extensive cultivation of rape, and by the general establishment of these cisterns ; to what pitch of improvement and produce might not the light lands of Great Britain and Ireland be speedily advanced ?—If it be a practical fact, that upon the farm of Vollandre, the urine of 44 head of cattle, with the aid of 12000 rape-cakes of 2lb. each, is sufficient to manure in the best manner twenty-one English acres, the proprietor of a rape-mill, who could house double that number of cattle, might venture on the improvement of an extensive tract, with every prospect of success. But the addition of the rape-cake is only for those who have the material in possession, or are able to purchase it ;—even

without it, the liquid manure is highly efficacious, but will not spread so far, or be so permanent; the cost, however, is only that of providing a suitable cistern; and if the mention now made of this practice, shall hereafter appear to have been the means of introducing it into our countries, it may have eventually rendered the cause of Agriculture no inconsiderable service.

SECT. IV.

Force of Work-Horses, and Manner of Feeding.

EIGHT horses perform the entire work of the 200 acres, and are in the highest possible condition. They are of the most compact kind of Flemish horse, and do not exceed $15\frac{1}{2}$ hands in height; chiefly roan and chesnut in colour. As the banks of the river supply good hay, in this district they are indulged with that species of food, which is not the case in other parts of Flanders; but they are also fed upon straw, chiefly of rye, and upon oats with chopped straw in every feed, and *after* every feed, a bucket of water, richly whitened with rye, or oat, meal. A vessel of this composition is in every stable, nor are the horses suffered to have any other drink. The quantum of food in the 24 hours for each

horse, in winter, is 15 lb. of hay, 10 lb. of sweet straw, and 8 lb. of oats; in summer, clover is substituted for hay; the other feeding remains the same; and the white water is never omitted: on this they place a chief reliance. The allowance of oats is but moderate, and yet the horses are in superior condition; the chopped straw contributes much to this, in converting, by the mastication necessary, every grain of corn to nutriment. The use of it is so universally approved throughout Flanders, that in every town it is sold by retail, and if generally adopted with us, it could not fail to improve the condition of the working horses, and lessen the expence of their provender.

In Flanders, a farmer will work fifty acres with two horses; and by the regularity of his care and keep, will preserve their condition. In Ireland, the great wheat farmer of Fingal, upon a similar extent, will keep four times the number, fed more expensively, but not so judiciously, always over-worked and always poor. Some of these farmers, upon 100 acres, keep sixteen horses in their employ, and there have been instances of three-fourths of that number being lost within the year by hardship and disease. By these means the profits of a farm are consumed without benefit to the farmer; and what would reasonably support and enrich him,

is squandered upon supernumerary horses. This special circumstance, not the high rent, keeps the tenant in indigence and difficulty. If landlords interfered to procure for their tenantry a good description of working horse, and encouraged them to use him properly, and feed him well, it would tend more to their advantage than any abatements they can give. Upon the farm of Vollandre, the management was in all points to be approved: economy prevailed in every respect, except in the application of manure; the occupier was in comfort and affluence, and yet his rent was near 40s. by the plantation acre, and his taxes triple those of the Irish farmer. The difference is to be found in established system, skilful management, and unceasing industry.

Upon the farm of which we have been speaking, all the crops yield a great return—too much so to be stated as the average of a district; the succession, however, is pretty generally the same. As a strong similarity exists in some of the adjoining Divisions, as to the quantum of seed, the quantum of produce, and other farming circumstances; to avoid repetitions, they shall be noted in their proper place; and we shall now proceed to Division No. IV.

CHAP. VI.

SECT. I.

DIVISION N° IV.

Boundaries, Soil, general Produce, and Rotations.

THIS Division runs to the north of Waereghem, to the south of Courtray, to the east of Elseghem, and to the west of Sweveghem, which are the chief places within its boundary. The soil is a good sandy loam, of a light colour, and is in a superior state of cultivation; it yields a similar produce to the foregoing division, with the same quality of hay; but plantations are here more numerous.

The succession is as follows:

1. Wheat, with dung,
2. Clover, with ashes,
3. Flax, with urine and rape cake,
4. Wheat, with compost of short dung and various sweepings,
5. Potatoes, with farm-yard dung or night-soil,
6. Rye, with urine,
7. Rape-seed, with rape-cake and urine,
8. Potatoes, with dung,
9. Wheat, with manure of divers kinds,
10. Clover, with ashes,
11. Oats, without manure,

12. Flax, with urine and rape-cake,
13. Wheat, with dung,
14. { Beans, with dung,
Beet root, with rape-cake, or
Tobacco, with rape-cake in great quantities.

Turnips are also grown, but are taken as a second crop after rape, flax, wheat, or rye.

Here, though the same species of crops are produced as in the adjoining Division No. III. yet the succession is different, and is invariably and strictly observed.

SECT. II.

Nature and Advantage of a Rotation System.

THE rotation system in general, is a subject of some intricacy, compounded of various objects and circumstances, which do not always coalesce; to be perfect, it must consist of such revolving produce, as may best suit the local market—best repay the farmer's cost and toil by an abundant return—best cultivate the soil as a preparation for the succeeding crops—best enrich it for the purpose of unceasing fertility—and most effectually prevent, by judicious alternation, that natural disgust, which even good land manifests to reiterated sowings of the same description.

The rotation system requires skill to select, and steadiness to persevere. Once established, it remedies all confusion, distinguishes and limits the season of each appropriate work, facilitates husbandry, economizes labour, reciprocates the improvement of soil and stock, and forwards the interest of both landlord and tenant.

In Flanders, they would consider their industry and their manure inefficacious, without the aid of a precise and well-regulated rotation; hence the variety of successions which we remark at every variation of the soil. They have been farmers time out of mind—rotation farmers for centuries; there is not a cultivated acre, the properties of which are not matter of notoriety, and according to those properties, the most suitable succession, and the most profitable application of manure, have been long since resolved on, and are now invariably practised. If then we can derive any useful suggestions from the country, we may be sure they do not arise from mere speculative experiment, but from tried and acknowledged practice. To follow their rotations in our countries indiscriminately, could not in common sense be recommended, indeed their own habits are against such imitation, as THEY do not follow those of an adjoining district; but if we could be brought to imitate them generally, by the adoption of some kind of

rotation system, governed by soil and circumstances, some valuable hints may be derived from their experience for special, though perhaps not general adoption.

SECT. III.

The Clover Crop.

IN their management of the clover crop, which is superior in this Division, they are most successful; indeed upon the cultivation of this plant hinges apparently the whole of the farmer's prosperity; it is here and every where, except where vetches are sown, the summer support of all his stock. Here are very few pastures. The clover cut and carried to well-littered stalls, becomes an abundant source of manure of two descriptions, and thus the cattle are made profitably subservient to the production of their own nourishment*.

The luxuriance of the clover is surprising, but doubly so, when you enquire the quantity of seed sown. In Ireland, for a soiling crop, we cannot be secure of a good one from less than

* The maxim here is, "Point de fourages, point de bestiaux; sans bestiaux, aucun engrais; et sans engrais, nulle récolte."—"No *forage*, no *cattle*; without cattle, no manure, and without manure, no crop."

20 to 28 lb. of seed per plantation acre, about $17\frac{1}{2}$ lb. to the statute acre; but in Flanders, the usual quantity is seven kylogrammes to the hectare, which is at the rate of about $6\frac{1}{4}$ lb. to the English, 8 lb. to the Scotch, and $10\frac{1}{4}$ lb. to the Irish acre. Whence then the superiority of the crop? Can it proceed from the reduced quantity of seed? No—for if we try the reduced quantity upon our common culture, we shall fail—it is to be accounted for in the fine preparation, and extraordinary cleanliness of the Flemish husbandry. The ground is repeatedly ploughed, and well manured; no weed is suffered to exist, and the clover plant can tiller uninterruptedly, and possess itself of the entire surface.

Their great attention to prevent weeds, is marked by the perseverance practised to get rid of one, which occasionally infests the clover crop, and is, indeed, most difficult to be exterminated. The *orobanche*, is a parasitical plant, attaching itself to the pea tribe, which, in land where clover has been too frequently sown, stations itself at its root, and if suffered to arrive at its wonted vigour, will spread, and destroy an entire crop. The farmer considers the mischief half done, if this dangerous plant be permitted to appear above the surface; and he takes the precaution to inspect his clover in

the early spring. The moment the *orobanche* establishes itself at the root, the stem and leaf of the clover, deprived of their circulating juices, fade into a sickly hue, which the farmer recognizes, and, with true Flemish industry, roots up and destroys the latent enemy. If this be done in time, and with great care, the crop is saved; if not, the infected soil refuses to yield clover again for many years.

This points out the necessity of a rotation so arranged, that not any of its crops, white or green, shall be repeated in too rapid a succession.

The small proportion of seed sown has been mentioned: little more than 6 lb. to the English acre for a full soiling crop; the cost of the seed at market about 6*d.* per pound. If this could be effected in our countries, what an encouragement to cultivate a crop, which constitutes the ground-work of all good farming. That which deters the common farmer from having clover, is the cost of the seed: if the habit of saving seed, which is general in Flanders, were adopted here, that objection would be shortly done away. The Flemish farmer does not save great quantities for sale, but takes care not to leave himself unprovided. The process is simple, and is as follows:

SECT. IV.

The Manner of saving Clover-Seed.

AFTER the first soiling crop is disposed of, the second growth is let run, till the heads are brown, crisp, and ripe; it is then cut (in general in September), and, having been left a day or two in the swath, is cocked and re-cocked, being daily spread out, till saved sufficiently to carry to the barn, where it is threshed for the prime and ripest grain, and afterwards sent to the mill to extract the remainder from the hulls*. There is nothing mysterious or difficult in the management, which should deter us from the attempt; the great point is, to have the ground so highly prepared for the reception of the clover, that it shall yield an early first crop; whatever part of it is cut early in May, will bear ripe seed in September; and however humid the climate of Ireland, that month is generally free from rain.

* The time of frost is particularly chosen for the threshing: one mesure of clover, well managed, will yield three hectolitres of seed, which would be, by the English acre, $7\frac{1}{4}$ ths Winchester bushels. The Winchester of clover runs from 56 to 71 lb. average $63\frac{1}{2}$ lb. Produce of the English acre, by weight, $4\frac{1}{4}$ ths cwt. By this it appears, that a small proportion of the clover crop might be made to furnish sufficient seed for the ensuing sowing.

The saving of clover-seed, even though it should not be a bright sample, would be of extreme importance to Ireland, in facilitating the introduction of a system of summer feeding, which would eventually tend to the general improvement of culture and soil.

For other particulars of this crop, in Flanders, it is only necessary to add, that they seldom fail to roll, and to manure it with ashes, at the rate of 37 hectolitres per mesure, or 45 Winchester bushels to the English acre; this they do in February, and obtain a great return; they generally have a third cutting; and, according to their supply or deficiency of other meadows, they determine what portion of the clover shall be saved as hay.

Two cuttings of good clover, as produced in Flanders, will support four head of cattle from the middle of May till October, by the English acre. Suffice it to say, that, without clover, no man in Flanders would presume to call himself a farmer.

CHAP. VII.

SECT. I.

DIVISION N° V.

Boundaries, Soil, general Produce, and Rotations.

THIS Division is bounded on the northern point, by the canal from Bruges to Ghent; on the south, by Winkle, St. Eloy, and Hulste; on the east, by Waereghem; and has the town of Rousselaere on its western verge: it also contains Inglemunster, Pithem, and Thielt.

The soil is not so good as in the foregoing division. The sand predominates; but in those parts which are least sandy, good wheat may be seen. The chief produce, however, is flax, rye, potatoes, oats, and buckwheat. Secondary produce: rape-seed, turnips, carrots, wheat, and clover. There are some natural meadows, very little pasture, but abundant plantations.

In that part of the Division where the soil can yield wheat, the succession of crops, and the quality and quantity of manure applied, are precisely the same as stated in No. IV.; but in the more sandy soil, rye is substituted for wheat; potatoes are made to commence, and buck-wheat to terminate the rotation.

SECT. II.

Rye: Its Management and Produce.

THE value of rye is duly appreciated in Flanders, and no where more than in this Division. Independent of its being a winter grain, and got into ground after harvest, in the least hurried season of the year, its intrinsic value ought to recommend it to the special notice of the British farmer.

It flourishes on a poor soil, ripens early, produces abundantly, and sells high; makes wholesome bread, is most valuable in the distilleries, and, by its refuse, returns to the soil through the medium of stall-fed cattle, the means of still more extended fertility.

In Flanders frequently, and in Brabant very generally, the farmer upon the scale of from 100 to 200 acres of light soil, is also a distiller, purely for the improvement of the land by the manure of the beasts which he can feed upon the straw of the rye, and the grains of the distillery. This, with us, would be considered a dangerous and speculative appendage to a farm-yard, requiring a command of capital for the outfit, as well as for the discharge of the necessary duties: from this latter disbursement they are exempt in Flanders; and the Government has so much at heart all the

minutest interests of agriculture, that a duty on farming distilleries will probably be the last tax imposed.

How far such encouragement to the farmers of our countries would be useful or judicious, is a question for statesmen ; but, even without it, the culture of rye in light soils, upon an extensive scale, might lead to the production of a wholesome spirit, which England, particularly, seems to require, and by which the farmer would be amply remunerated.

The management of the rye crop in this Division, is as follows : They commence by one good ploughing and harrowing, and then spread over the surface, farm-yard manure, 48 cart-loads of 15 cwt. each to the bonnier, or about ten tons to the English, twelve and three-fourths to the Scotch, and sixteen to the Irish acre ; they then plough this in, and sow the seed with a harrow, at the rate of 150 litres to the bonnier, which is about one Winchester bushel and a quarter to the English acre. In some places they do not sow more than a bushel ; the ridges are generally shovelled, and the produce is rated at four quarters and one-fourth to the English acre. This would be 43 $\frac{1}{4}$ th bushels upon the Scotch, and 11 barrels, of 20 stone each, upon the Irish acre. They estimate the manual labour of a bonnier, from the first preparation of ground to the sending the

grain to market at 128 men, 96 to the English acre, so that according to the market, and price of land, labour, &c. the value of the crop may easily be calculated. In Flanders it is considered of such importance, that its market-price comparatively with that of wheat, is generally as 4 to 5. By a memorandum of the prices current, at a particular time when wheat was at twenty-five francs per hectolitre, rye was at twenty-two; the price stood at twenty-three francs for a considerable time in the last year, which, according to the produce above-mentioned, of $4\frac{1}{4}$ quarters to the English acre, would be in English money about 12*l.* 10*s.*; nearly 16*l.* to the Scotch, and 20*l.* to the Irish acre. In Ireland there are various soils suited to its culture; it not only thrives upon sand, but flourishes upon mountains: near the summit of a pretty high one in the county of Wicklow, it has produced at the rate of nine barrels, of 20 stone each to the plantation acre; and yet look back to the weekly statement of the Dublin market for years, and you will find this valuable grain scarcely ever appearing in its returns. It seems to be admitted, that there is no arable land in Ireland which is not capable of producing wheat or rye: to what profit might not the knowledge of this fact, and the application of it, be converted, were the Flemish practice adopted, as to the culture of this latter grain, and the uses to which it may be made subservient?

Considering rye-bread as a food for travelling horses, it is there found superior to oats, and is in general demand ; but as a food for man, and as the earliest relief from the apprehension of famine, in a season of scarcity and distress, it might be desirable to have a portion of every farm dedicated to it. In the month of June 1817, in France, and in Flanders also, which has nearer affinity to our climates, the rye-harvest so long preceding that of any other grain, critically met the difficulties of the moment, and was cheered as the harbinger of health and plenty.

With respect to its value in the distillery, some observations shall be offered in the next Section.

SECT. III.

Value of Rye in the Distillery.

WHETHER the prejudice of Ireland and Scotland in favour of their native distillation, may give it in those countries a preference to that of Holland and Flanders, is not so properly a question, as whether, by the distillation of rye, a spirit at least as wholesome, (and to many more agreeable), may not be procured, whilst the interests of agriculture shall at the same time be advanced, by bringing into cultivation a description of soil better suited to this than to any other

grain ; but even as an article of consumption in England, where a base imitation of it supplies the general demand, the introduction of a purer kind must surely be an object.

In the department *de la Lys*, comprising the district of Bruges, Furnes, Ypres and Courtray, consisting of 314,606 hectares, or 746,434 English acres, and whose population is 461,659 souls, there are one hundred and twenty-nine distilleries of Geneva, great and small.

They compute that each of those will consume at an average, 117 myriagrammes (23 cwt.) of rye-meal in the twenty-four hours, which by the year, would be 5508950 myriagrammes (54147½ tons English)—from this they produce 176287 heetolitres* (4,656,638 gallons English) of spirit of 17 degrees of proof—whilst the Dutch, who are much abler chymists, obtain a similar quantity of 18 degrees of proof from 3,525,740 myriagrammes of meal, a saving of more than one-third. This results from the Flemish being guided altogether by practice, whilst the Dutch call in the aid of science ; but the former reconcile themselves to the deficiency by the increased quantity of manure. If they have not entirely arrived at

* This in lower numbers would be 16 litres from 5 myriagrammes, or four gallons and one quart, minus $\frac{1}{8}$ wine measure, from 110½ lbs. averdupois.

the high perfection of the Holland spirit, yet what they produce is very good, and if they fail in extracting an equal quantity of spirit from a given quantity of grain, they are enabled, by a more redundant refuse, to feed a great number of beasts, and thus to supply to the soil a greater proportion of manure. The grains or residue of 117 myriagrammes of rye-meal, employed in each distillery by the day, are considered sufficient to feed fifty beasts; and they compute that each beast, properly supplied with straw, will make within the year twelve carts of dung, of *fifteen hundred pounds* each cart, and 39 *tonneaux* of urine, each *tonneau* containing about 38 gallons English, beer measure; a quantity which in certain districts and for certain crops, is considered a fair dressing for one hectare, or nearly two and a half English acres, but may, according to their general application of manure, be deemed an abundant supply for about half that extent; and even so, what an advantage does Agriculture derive from the distilleries, when in the Department above mentioned, 3225 hectares, (nearly 8000 English acres), may be manured in the best manner from this source alone*.

* In addition to the manure from the stalls, the ashes of the pit-coal used in distilleries, yields a plentiful and valuable top-dressing for the clover crops. The foregoing statement and calculation as to the distilleries, and their produce in spi-

The Flemish distiller is nevertheless anxious to improve in his art, and some establishments have been formed, which are carried on to advantage by Dutch workmen. It is indeed a great object to increase their number of distilleries; for as there is always a redundancy of grain in Flanders, beyond the home consumption, the easiest and most profitable mode of export, becomes of course the most desirable; and from a calculation made a few years back, the myriagramme of rye exported in meal, yielded a profit in ordinary times of one franc and thirty-five centimes, but if exported in the form of Geneva, the profit was two francs and sixty-two centimes; the difference being one franc and twenty seven centimes—nearly double gain.

This calculation applied to 5,508,950 myriagrammes, the annual consumption as above stated,

The profit by *meal* exported, would be 7,437,082 francs.
 And by *Geneva* 14,433,449

Difference in favour of Geneva 6,996,367 francs.

rits and manure, has been extracted from a return to the Government, of the precise circumstances of the department. Whether the quantum of manure be not a little amplified, is a question which may suggest itself; but if it can be borne out any where, it is in Flanders, where every attention is paid to the collection of manure, and not a particle of it suffered to go to waste.

This and other obvious advantages attending the culture and distillation of rye, has established that crop as a chief one in the Flemish rotation ; perhaps it may be found advisable to cultivate it more generally in Great Britain and Ireland.

In Flanders the demand for this grain, as well for the purpose of food as for the distillery, keeps up its price next in order to that of wheat ; and if the consumers of bread find *that* a little enhanced by the competition, it is the only objection which can be made to the application of it in the other way : for the people, notwithstanding the cheapness and abundance of the spirit produced, are too prudent and too industrious to make an improper use of it, except in very few instances ; whilst in other respects great advantages are derived by the country, both in the fertilization of its soil, and as a profitable branch of commerce,

CHAP. VIII.

SECT. I.

DIVISION N° VI.

Boundaries, Soil, general Produce, and Rotations.

THIS Division is bounded on the northern point by Thorout, on the south by Zonnebeke, on the east by Rousselaer, and on the west by Bixchote. Its chief places are Ghits, Staeden, Roosbeke, and Passchendele.

The soil here is of a rich sandy loam, inclining to a yellowish colour. The chief produce is wheat, rye, rape-seed, flax, oats, potatoes, and buck-wheat; the secondary produce, turnips, clover and carrots: meadows and pastures very rare, timber plentiful, and oaks particularly flourishing.

The succession, like the soil, nearly resembles that of No. II. and is in general as follows:

1. Wheat,
2. Clover,
3. { Oats,
- { Turnips,
4. Flax,
5. Rye,

6. Rape-seed,
7. Wheat,
8. { Oats,
- { Carrots,
9. Buck-wheat,
10. Potatoes*.

In this district are to be seen, generally, specimens of excellent cultivation ; for though the Flemish maxim is to make the ground produce by dint of industry and manure, however ill disposed to do so it may naturally be ; yet a superior soil cannot fail to supply facilities which, in the Division we speak of, are taken advantage of, and are obvious in the general richness which prevails.

SECT. II.

The Carrot Crop : Its Management and Produce.

THIS sandy loam of a good quality, is a soil peculiarly suited to the carrot crop, which they turn to great benefit in the feeding of their horses and cattle, considering it a most wholesome diet, and (where hay is not to be had, which is the case here), an admirable substitute for that species of fodder, and at the same time one which enables them to curtail the quantity of oats that the work-horses would otherwise consume. The

* The kinds and quantities of manure applied, will be seen hereafter.

carrot in general use for this purpose is white, and yields an equable crop of heavy roots, which average, perhaps, when trimmed, about a pound and a half in weight. This is to be understood as of a single crop, to which the whole season is dedicated; even as a second crop when sown with oats or rye, they hold them a valuable acquisition; but certainly, they are then by no means so full grown or so productive.

The culture is as follows: after harvest they give the land a moderate ploughing, which buries the stubble, and clearing up the furrows to drain off the water, they let the field lie so for the winter; early in spring they give it a second ploughing very deep, (from eleven to twelve inches), and shortly after they harrow the surface well, and spread on it ninety-six carts of manure to the bonnier, about twenty-one tons to the English acre. This manure is in general half from the dunghill and half of what is termed *merde*, or a collection from the privies, which being ploughed in, and the surface made smooth, they sow the seed in the month of April broadcast, and cover it with a harrow. The quantity sown is estimated at eleven pounds to the bonnier, or about three pounds to the English acre. The average produce is two hundred hectolitres to the bonnier, value six francs the hectolitre, which would be about 160 Winchester bushels to

the English acre, value about 14*l.* according to the Flemish price. The manual labour is estimated at about twenty-six men to the English acre. In some cases they form the ground into broad sets of eighteen feet, and sow the carrots broad-cast across the sets, thinning them by hand in straight lines, so as to give the appearance of drills, which are moulded by the hoe. The intervals between the sets are frequently occupied by the *feves haricots*, a large species of French bean, which is suffered to come to maturity, and being then sliced with the pod, constitutes, when cooked, a chief dish at the farmer's table.

The carrot crop to which I have alluded, is not sown with any other crop. That which is sown with rye or oats, has acquired but a very moderate growth at harvest time, and except in a country where manual labour abounds, and where every exertion must be made for the support of stock, and the production of manure, it would scarcely pay the expence. It is sown broad-cast with the last stroke of the harrow at the time of sowing the corn, and when the stucks are carted off, it is cleared by hand of every weed and every particle of stubble. This is done in general by women, who go upon their knees during the whole of the operation, and have a particular dress for this purpose. Even in the sandy soil in which alone carrots are cultivated, this

weeding requires at the rate of twenty persons to the English acre. The women employed have five-pence and their diet, each per day. The produce cannot in general be estimated at more than one half the quantity when sown as a crop by itself; yet in some favourable soils it is computed at two-thirds; but as nutritive food both for cattle and horses, it is a crop extremely valuable. In Flanders, it is generally substituted in the room of hay, and a moderate quantity of oats is also given. To each horse, in the twenty-four hours, a measure is allotted, which weighs about twenty-five pounds. This appears a great quantity, but it makes hay-feeding altogether unnecessary. To each of the milch cows, a similar measure is given, including the tops, and this is relied on for good butter, both as to quantity and quality.

SECT. III.

Culture of Tobacco.

IN the five last Divisions, tobacco and hops are more or less cultivated; in a moderate degree by many, but not to a great extent by any individual.

In the district of Ypres (a chief situation for those productions), the latter occupies about the hundred and thirtieth part, and the former the

five hundredth part of the cultivated soil ; comprising of tobacco about two hundred, and of hops about seven hundred and fifty English acres.

Tobacco is usually taken after rye : immediately upon the removal of the crop, the stubble is ploughed lightly over, and suffered to remain so till the latter end of October, when the land receives another very deep ploughing, and (the furrows being well cleared up to let the surface-water run freely), remains in that state till the spring, when it undergoes another deep ploughing. It is well harrowed in the month of June, and has a fourth ploughing, which covers the manure, and a final harrowing, which prepares it for the reception of the plants. The manure applied is, in some cases, rape-cake alone, and in others rape-cake and farm-yard dung. In the latter case, the quantity, as used in Division No. II. is 45 loads of dung, and 7800 rape-cakes to the hectare, which would be about eight tons of dung, and nearly three tons of rape-cake to the English acre; the cost of which, even at the Flemish price, would be upwards of 20*l.* British; but in this excess of cost for manure, wherever the soil and crop require it, they make no scruple to acquiesce, nor can there be a stronger instance than this of their industry and perseverance, in making the ground, by every possible exertion, produce to the utmost of its capability.

In Divisions No. III. and IV. they are not so much in the habit of using dung for the tobacco crop, but rape-cake alone, in the quantity of 12,800 cakes to the bonnier, a measure of land differing from the hectare; each cake weighs two pounds, and each hundred cakes cost fifteen francs; so that the expence seems enormous. This dressing would add about half a ton by the English acre, in lieu of dung, making nearly three tons and a half of rape-cake the proportion for one acre. The Flemish price of fifteen francs for the hundred cakes, of two Flemish pounds each, would be about 6*l.* 15*s.* British per ton. The cost of manure, therefore, for one acre, would be 23*l.* 12*s.* 6*d.*; the produce, however, is very considerable, at an average, 9000 lbs. by the bonnier, which sells at fifty centimes a pound. This would be by the English acre 2572 lbs. and in English money 53*l.* 11*s.* 8*d.* at the Flemish price. Here then lies the incitement: for notwithstanding four ploughings and harrowings, and the cost of plants, and of 300 men employed in the culture of one bonnier*, with every other charge of rent, taxes, &c. they seldom fail of a certain profit of at least 20*l.* and often considerably more, by the English acre.

* Three hundred men by the bonnier, would be about eighty-five by the English acre.

The tobacco seed is sown pretty thick in a seed-bed in the month of March, which furnishes suitable plants in the month of June.

The field is formed into sets of twenty feet wide, and the plants are put in across those sets, at intervals of three feet every way, and in quincunx form. The proper stage at which the plants should be moved from the seed-bed, is, when they have acquired five or six leaves; and it is considered of great moment to chuse a moist and cloudy season for transplanting. They take great care in spreading the roots and fibres of the young plant, and put them in ground as deep as the first tier of leaves.

When the plants arrive at two feet in height, they top those of whose leaves they approve, taking off all that are very near the ground, and those that are worm-eaten or decayed, and leaving, of the best, about a dozen at most upon the stalk. These they harvest, when their colour deviates from a beautiful green to a darker tint, when they begin to shrivel, to incline to the ground, to grow rough to the touch, and to break more easily upon being bent.

This takes place about the middle of September, at which time the plants are cut down close to the ground, and left for a few hours on the field, that they may be a little withered before they are carried to the barn; for this reason, the

workmen cease from cutting, three or four hours before sun-set.

The tobacco plants, when deposited in the barn, are as soon as possible stripped of their leaves, which are put on strings, in lengths of about six feet, and are left for two or three days in small heaps, to undergo such a degree of fermentation as may be sufficient to expel the superabundant moisture.

The remaining operation, is the exposure of the leaves to dry, either in the open air or in houses; where the latter can be conveniently had, the process is the most secure; if in the open air, particular attention must be paid to protect the leaves from rain, from harsh winds, and even from the immediate influence of the sun. When dried they are ready for the manufacturer.

It is to be observed, that land which has yielded tobacco, is not resorted to again for a similar crop for seven years.

SECT. IV.

Culture of Hops.

THIS crop is generally taken after wheat.—
The land having received four ploughings, as

mentioned for the tobacco crop in the last Section, the hop plants are put in, in the month of May, in rows with intervals of six feet, and at six feet distance in the row. In the month of October, they raise the earth round each plant, in little mounds about two feet and a half high, for the purpose of encouraging a number of shoots, and of preserving them from the frost. When all harsh weather has disappeared, about the beginning of April in the second year, they level those little heaps, and take away all superfluous shoots at the root, leaving but four or five of the strongest. They then spread over the entire surface, at the rate of twelve carts, of 1500 lbs. each by the English acre, of dung, either of cows, or of cows and swine mixed, but they avoid the heat and fermentation of horse-dung. This dressing is given when the shoots begin to appear; at which time also, they fix in the earth close beside them a pole of dry wood, about eighteen feet in length, for the vines to cling by. In the month of July, they give the surface another dressing, with urine, at the rate of 1000 gallons to the English acre.

In the month of August the crop has nearly arrived at its full growth, and flourishes in all its beauty. In the month of September, when the fruit is full formed, they cut the runners at about three feet from the ground, and in November

they cut them to the earth; they then heap up the soil about each plant as before, to the height of two feet and a half, and follow precisely the same course as above-mentioned each year during five, which is the usual time they suffer the plantation to continue, and at the expiration of which the land is in the highest condition, and suited to the reception of any other crop.

In the hop harvest they are particularly anxious to avail themselves of a warm sun, to save the flowers—all the brightest and best samples are produced by these means. The hops which we remark of a deep and dusky shade, have been unfortunately harvested. The sun is the most effectual mode of drying to the best advantage.

SECT. V.

Culture of Oillettes, or the Small Poppy.

THE oillette is also a production of these Divisions, and yields a very fine oil; in many instances, of so good a quality as to be used for salad oil.

This seed requires a rich soil, and well manured. The crop is in this district generally taken after rape, for which the ground has been plentifully manured; and for the oillettes it receives

the ensuing year a dressing not less abundant. The land which has been so highly cultivated and enriched for the crop of rape, is in such good tilth upon pulling the rape-stalk, that two deep ploughings are sufficient to prepare it for the reception of the seed of the oillettes. Upon the first ploughing, harrowed flat, the manure is spread, at the rate of 560 hectolitres of liquid manure, (in which 2000 rape-cakes have been dissolved), to the bonnier; which would be about 3500 gallons to the English acre. This being ploughed in, in sets of ten feet, the seed is sown at the rate of one gallon to the English acre, and is lightly covered by shovelling the furrows. The average produce is about thirty-five hectolitres per bonnier, which would be about thirty Winchester bushels to the English acre.

This seed is not so productive as rape, in point of quantity, but exceeds it in price, both as grain, and as oil, by at least one sixth. The measure of oil produced from rape, is as one to four of the seed; that produced from the seed of the oillettes, is as one to five.

Though this seed is sown both in spring and in autumn, the latter is considered the best season; great attention is given to the pulverization of the soils; frequent harrowing, and (if the weather and state of the soil permit), sufficient rolling, to reduce all the clods.

The harvesting is performed in a particular manner, and requires a great number of hands. The labourers work in a row, and sheets are laid along the line of the standing crop, upon which, bending the plants gently forward, they shake out the seed. When it ceases to fall from the capsules, that row of plants is pulled up, and placed upright in small sheaves, in the same, or an adjoining field, in order to ripen such as refused to yield their seed at the first operation. The sheets are then again drawn forward to the standing crop, and the same process is repeated, till all the plants be shaken, pulled up, and removed.

In two or three days, if the weather has been fine, the sheets are placed before the rows of sheaves, which are shaken upon them, as the plants were before; if any seed remain, it is extracted in the barn by the flail; and if the weather be unpromising, the plants are not left in the field after the first operation, but are placed at once under some cover, to ripen, and yield the remainder of their seed, either by being threshed or shaken.

SECT. VI.

Average of Seed in Divisions II. III. IV. V. VI.

THOUGH the soils in those Divisions, respectively, exhibit shades of difference which have

been stated, and which guide the several rotations, yet as there is at the same time a striking similarity, which distinguishes them essentially from Division No. I. as well as from those which are to follow, and as their productions are also very similar, it may be well to state their general average, as to quantum of seed and produce.

In this district, the bonnier is the general measure by which land is let or sold, and according to that, the proportion of the seed is as follows:

Wheat.—Two and a half hectolitres by the bonnier—This, by the English acre, would be two Winchester bushels—by the Scotch acre, five-eighths of a boll—by the Irish acre, fourteen stone.

Rye.—One hectolitre and a half by the bonnier—This, by the English acre, would be one Winchester bushel and one fifth—by the Scotch acre, $1\frac{1}{2}$ Winchester bushel—by the Irish acre, seven stone and a half, of 14 lb. each*.

Oats.—Three hectolitres by the bonnier—This would be, by the English acre, two Winchester bushels and a half—by the Scotch acre, nearly half a boll—by the Irish acre, eleven stone one-fifth.

Flax.—Three hectolitres by the bonnier—This would be, by the English acre, two Winchester bushels and a

* Amongst the other advantages appertaining to the culture of rye, as before mentioned, the reduced proportion of seed, is worthy of consideration, especially in a season of scarcity.

half—by the Scotch acre, three Winchester bushels—by the Irish acre, four Winchester bushels.

*Rape**.—Seven pints by the bonnier—This would be, by the English acre, one quart—by the Scotch acre, one quart and one-fourth—by the Irish acre, one quart and two-thirds.

Oillettes.—Twenty-eight pints by the bonnier—This would be, by the English acre, one gallon—by the Scotch acre, one gallon and one-fourth—by the Irish acre, one gallon and two-thirds.

Potatoes.—Twenty hectolitres by the bonnier—This would be, by the English acre, eight cwt. four-fifths—by the Scotch acre, eleven cwt. and a quarter—by the Irish acre, five barrels and three quarters, of $2\frac{1}{2}$ cwt. each.

Beans.—Three hectolitres by the bonnier—This would be, by the English acre, two Winchester bushels and a half—by the Scotch acre, three Winchester bushels—by the Irish acre, fifteen stone and three quarters.

Carrots.—Eleven pounds by the bonnier—This, by the English acre, would be about three pounds one-seventh—by the Scotch acre, about four pounds—by the Irish acre, about five pounds one-ninth.

SECT. VII.

Average of Produce in Divisions II. III. IV. V. VI.

Wheat.—Twenty-eight hectolitres by the bonnier—This would be twenty-two and three-fourths Winchester

* Rape is generally cultivated by transplantation: when sown broad-cast the proportion of seed is as above stated.

bushels, by the English acre—seven bolls one-fifth, by the Scotch acre—seven barrels seven-eighths, by the Irish acre.

Rye.—Thirty-five hectolitres by the bonnier—This would be twenty-eight one-third Winchester bushels, by the English acre—thirty-six Winchester bushels, by the Scotch acre—nine barrels one-fifth, of 20 stone, by the Irish acre.

Oats.—Sixty-four hectolitres by the bonnier—This would be fifty-one five-sixths Winchester bushels, by the English acre—ten bolls, by the Scotch acre—seventeen barrels, of 14 stone, by the Irish acre.

Flax.—Eight hectolitres of grain by the bonnier—This would be six and a half Winchester bushels, by the English acre—eight and a quarter Winchester bushels, by the Scotch acre—ten and a half Winchester bushels, by the Irish acre.

Exclusive of the grain or seed, the average profit of the stem is valued as follows :

1500 francs by the bonnier—This would be 17*l.* 16*s.* 9*d.* by the English acre—22*l.* 13*s.* 6*d.* by the Scotch acre—30*l.* 4*s.* 10*d.* by the Irish acre.

Rape.—Forty hectolitres by the bonnier—This would be thirty-two two-fifths Winchester bushels, by the English acre—forty-one one-seventh Winchester bushels, by the Scotch acre—eleven barrels three-fourths, of 16 stone each, by the Irish acre.

Oillettes.—Thirty-five hectolitres by the bonnier—This would be twenty-eight one-third Winchester bushels, by the English acre—thirty-six Winchester bushels,

by the Scotch acre—forty-five three-fourths Winchester bushels, by the Irish acre.

Potatoes.—Four hundred hectolitres by the bonnier—This would be eight tons five-sixths, by the English acre—eleven tons one-fifth, by the Scotch acre—fourteen tons one-third, or 114 barrels of $2\frac{1}{2}$ cwt., by the Irish acre.

Beans.—Thirty-five hectolitres by the bonnier—This would be twenty-eight one-third Winchester bushels, by the English acre—thirty-six Winchester bushels, by the Scotch acre—ten and a quarter barrels, of 20 stone, by the Irish acre.

Carrots.—Two hundred hectolitres by the bonnier—This would be one hundred and sixty-two Winchester bushels, by the English acre—two hundred and five and three-fourths Winchester bushels, by the Scotch acre—two hundred and sixty-two ditto, by the Irish acre.

In the last-mentioned Divisions, the average is not as high as in No. I. except in the bean crop, which surpasses that of the strong land nearly one-third; but for all the other produce to which that Division is applied, it is considered the best soil of Flanders: of course, the best return is there naturally to be expected; but when the inferiority of soil in the Divisions we have lately had under our view, comes to be considered, and the still further deterioration of some we have yet to treat of, it will rather be matter of surprize, that their produce should bear any tolerable proportion to that of the superior

soil. But the fact is, that as natural difficulties accumulate, industry is more on the alert, and in this country of persevering labour and exertion, a respectable return is procured even from the poorest soil, which in other countries would be considered nearly a barren sand.

SECT. VIII.

The Kinds and Quantities of Manure.

THE manures made use of in those Divisions, though occasionally mentioned, may properly be stated here in their kinds and quantities.

For Wheat.—Either dung or compost : forty-eight carts, of 15 cwt. each, to the bonnier ; which is equal to 10 ton 10 cwt. by the English acre.

For Rye.—Farm-yard manure : a similar quantity.

For Oats.—Dung : a similar quantity.

For Flax.—Three thousand rape-cakes, of 2 lb. each, and forty-eight carts of urine, &c. by the bonnier : equal to 864 cakes, and nearly 14 carts, by the English acre.

For Rape.—Two thousand rape-cakes, and 64 carts of urine, by the bonnier : equal to 580 cakes, and 18 carts, by the English acre.

For Oillettes.—A similar kind and quantity.

For Potatoes.—Forty-eight carts of *vidanges*, or manure from privies, and forty-eight carts of stable dung, by

the bonnier: equal to about 14 carts of each, or 21 tons, by the English acre.

For Beans.—A similar kind, and quantity.

For Turnips.—Short farm-yard dung and urine, equal quantities, thirty-two carts by the bonnier: equal to 9 carts, by the English acre.

For Carrots.—Forty-eight carts of *vidanges*, or manure from privies, and forty-eight of stable dung, by the bonnier: equal to 14 carts of each, or 21 tons, by the English acre.

For Tobacco.—Twelve thousand eight hundred rap-cakes, by the bonnier: equal to 3664 cakes, or about 3 tons and $\frac{1}{4}$ by the English acre.

SECT. IX.

Rent of Land, &c. &c.

THE rent of land throughout this district is from 76 to 108 francs by the bonnier: from about eighteen shillings to twenty-six shillings the English acre.

The purchase of land, from 2000 to 2700 francs by the bonnier: from about 23*l.* to 32*l.* by the English acre.

The land-tax is one-fifth of the rent, and the other contributions at the rate of about nineteen-pence the English acre. The duration of leases: three, six, and nine years. The extent of farms, from two to fifty bonniers: from seven, to one

hundred and seventy-five English acres.—Labour is about 6*d.* per day, with diet.

You can in this part of the country purchase the best kind of work-horse for about twenty pounds British, and a good milch cow for about eight pounds.

We now proceed to Division No. VII.

CHAP. IX.

SECT. I.

DIVISION N° VII.

Boundaries, Soil, general Produce, and Rotations.

THE northern point of this Division touches near Passchendaele ; the southern near Wer-veke ; the eastern, approaches Dadizeele ; and the western, reaches within two miles of Ypres. Its chief places are Rousselaer, Gheluvelt, and Zandvoorde.

This Division is sandy, of a poor quality, and in a great measure given up to wood. It seems a continued vein of the lightest quality of soil of No. V. which Division separates it from those of No. VIII. and No. IX., and to whose general description, though lying remote from them, it bears so great affinity in soil, culture, and produce, that, notwithstanding some minute shades of difference, those three Divisions may very properly be taken under consideration at the same time.

SECT. II.

DIVISIONS N^o VIII. AND N^o IX.*Boundaries, Soil, general Produce, and Rotations.*

THOSE Divisions, in point of extent, are considerable; and in the poverty of their soil and abundance of their produce, bear ample testimony to the skill and perseverance of the Flemish farmers.

The northern point of No. VIII. touches at Maldegem; the southern, between Woomen and Staeden; the eastern, near Beernem; and the western, at Dixmude. Its chief places are Bruges, Thorout, and Dixmude.

The northern point of No. IX. touches near Ertvelde; the southern, at Oustzeele; the eastern, at Seven-Ecke; the western, between Deinze and Thielt. Its chief places are Ghent, Nivelles, Deinze, and Waerschoot.

The soil of those three Divisions consists of a poor light sand. A considerable proportion of them, in the fifteenth century, were, as is stated, barren lands and heaths. The spots, which remain uncultivated, are proof pieces of the original quality, but are now rarely to be seen.

The chief produce here is, rye, flax, potatoes, oats, buck-wheat; rape-seed, and wheat in a few

favourable spots ; clover, carrots, and turnips, generally. The western part of No. VIII. is the best soil, and yields barley, beans, and vetches. There are in this direction some good pasture grounds. The hay is not abundant, and is of a coarse quality in low lands, subject to flood. Timber, and other wood for fuel, are to be found in great abundance throughout those Divisions. In No. VII. and No. IX. there is very little soil to be found strong enough for the production of wheat, barley, or beans ; but in other respects, the succession and management in No. VIII. may be taken as a standard for all.

On the western side of the district, and where the soil is capable of yielding wheat, there are two modes of rotation : one comprising a nine years' course, in which wheat is but once introduced ; and the other, a ten years' course, in which they contrive to produce that crop a second time ; but in neither instance, without manure, which, indeed, is never omitted in these Divisions, except for buck-wheat, and occasionally for rye. Nor can there be a stronger instance of the natural poverty of the soil, and of the misconception which prevails as to its general richness, than the necessity of this annual recurrence to manure ; without which, all the labour and industry of the farmer would be in vain. Nor are they less liberal of their labour with respect to frequent ploughing ; nor do they suf-

fer a field to remain a week after the crop is harvested, without being turned by the plough. Even in this sandy soil, they rely much upon the utility of this practice; and especially for the prevention of weeds.

The first course alluded to above, is as follows :

SECT. III.

Rotations upon the best Soil.

- 1st year, *Potatoes or carrots*, with four ploughings, and twelve tons of farm-yard dung, per English acre.
- 2d, *Flax*, with two ploughings, and 105 Winchester bushels of ashes, and 48 hogsheads, beer measure, of urine, per English acre.
- 3d, *Wheat*, with two ploughings, and ten tons and a half of farm-yard dung, per English acre.
- 4th, *Rye and turnips*, with two ploughings, and ten tons and a half of farm-yard dung, per English acre.
- 5th, *Oats with clover*, with two ploughings, and ten tons and a half of farm-yard dung, per English acre.
- 6th, *Clover*, top-dressed with 105 Winchester bushels of peat or Dutch ashes, per English acre.
- 7th, *Rye*, with one ploughing, and 52 hogsheads, beer measure, of night-soil and urine.
- 8th, *Oats*, with two ploughings, and 52 hogsheads, beer measure, of night-soil and urine.
- 9th, *Buck-wheat*, with four ploughings, and without any manure.

The other course is as follows :

1. Potatoes or carrots,
2. Wheat,
3. Rye and turnips,
4. Oats and clover,
5. Clover,
6. Rye,
7. Rye and turnips,
8. Oats.

The number of ploughings, and the quality and quantity of manure, the same as in the former course.

9. Rape, with three ploughings ; eight tons and a half of farm-yard dung, and forty-eight hogsheads of urine, per English acre.
10. Wheat, with three ploughings, and ten tons and a half of farm-yard dung, per English acre.

The foregoing courses are those in use in the best soil of the district. In the remainder, where wheat cannot be grown, there are also two distinct rotations—one embracing a succession of twelve, the other of fifteen years. The first is as follows :

SECT. IV.

Rotations on the inferior Soil.

- 1st, *Rye and turnips*, with two ploughings, and ten tons and a half of farm-yard dung, per English acre.
- 2d, *Oats and clover*, with three ploughings, and the same quantity and quality of manure as for the rye.

H

- 3d, *Clover*, top-dressed with 105 Winchester bushels of peat or Dutch ashes, per English acre.
- 4th, *Rye*, with one ploughing, and 52 hogsheads of urine or night-soil, per English acre.
- 5th, *Rape and turnips*, with three ploughings for the rape, about one ton and a half of lime, and 52 hogsheads of urine, per English acre; and one ploughing for the turnips (after the rape is harvested), with ten tons and a half of farm-yard dung, per English acre.
- 6th, *Rye*, with one ploughing, and forty-eight hogsheads of urine or night-soil, per English acre.
- 7th, *Oats*, with two ploughings, and the same quantity and quality of manure as for the rye.
- 8th, *Buck-wheat*, with four ploughings, and without any manure.
- 9th, *Potatoes*, with three ploughings, ten tons and a half of farm-yard dung, and top-dressed with thirty-seven hogsheads of urine or night-soil, by the English acre.
- 10th, *Flax and Clover*, with two ploughings, ten tons and a half of mixed manures, and fifty-two hogsheads of urine, or night-soil, per English acre.
- 11th, *Clover*, top-dressed with 105 Winchester bushels of peat or Dutch ashes, per English acre.
- 12th, *Rye*, with one ploughing, and without any manure.

The other course is as follows :

- 1st, *Rye and turnips*,
 2d, *Oats and clover*,
 3d, *Clover*,
 4th, *Rye*,

The number of ploughings, and quantity and quality of manure, the same as in the former course.

5th, *Turnips* on fallow, with five ploughings, and ten tons and a half of farm-yard dung, per English acre.

6th, *Rye*, with one ploughing, and fifty-two hogsheads of urine or night-soil, by the English acre.

7th, *Oats*, with two ploughings, and forty-eight hogsheads of urine or night-soil, per English acre.

8th, *Rape*, with three ploughings, and one ton and a half of lime, with fifty-two hogsheads of urine or night-soil, or with eight tons and a half of farm-yard dung, and forty-eight hogsheads of urine or night-soil, per English acre.

9th, *Rye*, with one ploughing ; and in case lime has been used with the preceding crop, then ten ton and a half of farm-yard dung is used with this ; but should dung have been applied to the crop of rape, ashes are adopted for the rye crop at the rate of one hundred Winchester bushels to the English acre.

10th, *Black-wheat*, with four ploughings, and without any manure.

11th, *Potatoes*, with three ploughings, and ten tons and a half of farm-yard dung, aided by a top-dressing of thirty-seven hogsheads of urine, or night-soil, per English acre.

12th, *Carrots*, with three ploughings, and twelve tons of farm-yard dung, by the English acre.

13th, *Flax and Clover*, with two ploughings, ten tons and a half of mixed manure, and fifty-two hogsheads of urine, to the English acre.

14th, *Clover*, top-dressed as in former course.

15th, *Rye*, with one ploughing, and without any manure.

SECT. V.

Turnips after Rape.

IN the fifth year of the first of those courses, a very particular practice is to be observed, viz. rape followed by turnips in the same year; a practice considered important in Flanders, where the cattle are always housed, pastures and meadows very scarce, and every exertion of course made for winter provender, the only apology for their light second crops of turnips, which are generally taken with one ploughing after a corn crop and without manure; the return must of course be very inconsiderable, and the turnips of a diminutive growth; but they make amends for this by the extent of surface, regardless of the excessive labour of thinning, weeding, pulling, and carting crops, which, from the lateness of the sowing, and in general upon a stubble without manure, cannot be otherwise than unproductive.

In the particular instance of the succession now alluded to, to obviate the risk of so late

sowing after the rape harvest, manure is specially applied, which certainly forwards the crop a little; and for this purpose also, an earlier transplantation of the rape is made to take place the preceding autumn, by which means that crop is likely to be off the ground in the month of August. But it would be difficult to persuade the turnip farmer of Great Britain or Ireland, to rely upon so late and precarious a supply of green food; particularly as the Swedish turnip, so superior to the other kinds, cannot be had in perfection, but by good tillage, abundant manure, and early sowing; nor is it improbable that the introduction of that valuable species into Flanders, where it is as yet unknown, may establish the turnip system with them, as a regular rotation crop, to which their best application of labour and manure shall be devoted, to the abolition of those puny returns which can scarcely pay expences, though in the absence of other provender, they cannot be dispensed with as a support for their cattle.

SECT. VI.

Treatment of Waste Lands.

BESIDES the soils which are subject to the foregoing rotations, another quality presents it-

self in these Divisions, under the denomination of *bruyères*—heaths, or waste lands, the treatment of which varies according to their intended destination.

If designed for future cultivation, the management is as follows :

1st year, *Rye*, with three ploughings, and 134 Winchester bushels of wood-ashes from the bleacheries, per English acre.

2d, *Rye*, with two ploughings, and seven tons of sweepings, or compost of mixed manure, by the English acre.

3d, *Oats*, with two ploughings, and 48 hogsheads of urine, by the English acre.

4th, *Buck-wheat*, with four ploughings, and without any manure.

5th, *Rye*, in the same manner as in the first year of the course.

And after that, one or other of the long courses, as mentioned in Section IV. is regularly proceeded on. But where the reclaimed ground is intended for plantations, the method is thus :

1st year, *Rye*, with three ploughings, and manure or wood-ashes, as in the former course.

2d, *Rye*, with the same ploughing and manure as in the same year of the former course.

3d, *Oats*, with two ploughings, and without any manure.

4th, *Buck-wheat*, with four ploughings, and without any manure,

5th, *Buck-wheat*, with four ploughings, and without any manure.

6th, Plantation of oak and birch.

SECT. VII.

Improvement of Waste Lands by Fir Seed.

MOST of the woods which exist in those Divisions, as well as the young plantations of forest trees, have been produced by the foregoing process upon a tract of country for the most part barren (as has been already mentioned), in the fifteenth century; but one still cheaper and less laborious, is adopted with great success for the production of trees of the fir tribe; and the poorest of this heathy sand, is by very summary means clothed with Scotch fir and other hardy pines.

The most common, and simplest mode, is that of burning the surface, to which process, its heathy quality gives great facility. The ashes being spread, the ground is formed into beds from six to fifteen feet wide, according to circumstances—the seed sown at the rate of six pounds to the English acre, and covered by a light shovelling from the furrows, which are

sunk about two feet, not only to supply covering to the beds, but as drains to carry off the surface water.

Extensive woods have been created in this manner, converting a barren soil into a state of production, the least expensive, most profitable, and most ornamental. Of six years' growth, there exist flourishing plantations (treated in this manner), from five to nine feet in height. At about ten years from its formation, they begin to thin the wood, and continue to do so annually, with such profit by the sale, as at the end of thirty years to have it clear of every charge; a specific property being thus acquired, by industry and attention merely, without the loss of any capital.

Fir seed is also sown, and with great success, without the labour of burning the surface, as at Vladslloo, in the neighbourhood of Dixmude, where a luxuriant crop of but five years' growth, and seven feet in height, had been cultivated by Madame de Cleir, by merely ploughing the heathy surface into beds of fifteen feet, harrowing, sowing at the rate of six pounds to the English acre, raking in the seed, and covering the beds lightly from the furrows, which are sunk about eighteen inches deep.

Another mode practised by the Baron de Serret, in the vicinity of Bruges, was productive

of a growth not less luxuriant, merely by sowing the seed upon sand (taken from the excavation for a building), which was spread over the heathy surface, the seed raked in, and the furrows shovelled up.

In many instances, the sowing of fir seed is adopted for the purpose of bringing waste land into an arable state, which, when the timber has been disposed of, is found to yield admirable crops, from a surface soil formed by the accumulation of the leaves which have fallen for so many years. For this purpose also, the broom is frequently sown upon waste lands of a similar description, and at the end of four or five years, is pulled away, leaving the soil capable of yielding crops of corn.

SECT. VIII.

Attention to the Preservation of Trees.

WHERE woods consist of a variety of forest trees, and are intended to remain either for a periodical supply of firewood or as gross timber, the attention not only of the proprietors, but of the government, is most precise: a singular instance of the latter may be introduced here, to shew the acknowledged importance of planta-

tions in Flanders, and as a stimulus to some parts of our countries, where they are so much neglected.

At a certain season of the year, when the caterpillars commence their attack upon the trees, every farmer is obliged to destroy those upon his own premises, to the satisfaction of the Mayor of his particular Commune, or to pay the cost of having it done for him. As a proof of the strictness with which this is enforced, the following translation of the Governor's circular is inserted.

" Circular relative to the care of Trees, Hedges, and Plantations.—Feb. 11, 1817.

" The Governor of Western Flanders, Chamberlain to His Majesty, &c. &c.

" To the Sous-Intendans and Mayors.

" SIR,

" I have the honour to remind you of the obligation which the order of the ci-devant Prefect, bearing date the 31st of January, 1806, imposes on you, annually, of superintending the operations of ridding from caterpillars, the trees, hedges, and plantations, and to make your tour for this purpose on the 1st of March.

" Messieurs the Sous-Intendans will, in the course of the month of April, furnish me with their reports of the inspection of Messieurs the Mayors, and with the statements of the expence, to which such official interference

has given rise, that it may be charged to those who have themselves delayed the operation.

“Receive, Sir, the assurance of my perfect consideration.

“BARON DE LOEN.”

The proprietor is also very attentive to the preservation of the trees, which the farmer is obliged to restore in perfect safety at the termination of his tenure. It is generally understood, that all belong to the proprietor or landlord, but the hedges and coppices which separate the fields, are, by common usage, at the farmer's disposal for firewood, &c. Besides these, in some cases, by covenant in the lease, certain spaces of the same species of wood are left for the farmer's profit; but he is strictly bound as to intervals of cutting them: for instance, the oak at seven or eight years' growth; the ash, the birch, the alder, and others of a similar nature, from six to seven years. The pruning of all the trees is performed annually with the greatest precision: the proprietor employs persons skilled in this work, and has the benefit of the lop-pings; but in many instances the farmer, by agreement, has the advantage of them, upon paying the men who are sent to prune. Should the farmer, as is frequently the case, make any additions to the hedges or plantations at his own cost, he has a valuation made at quitting

the farm, of all that appear to be of his planting, and the amount of that valuation is paid him by the in-coming farmer. In short, timber of every description is of such acknowledged value in Flanders, for the various purposes to which it can be applied, that the most minute attention is paid by all ranks to its growth and preservation. If a little of the same spirit could be diffused through Ireland, what a different aspect would the country soon present? the newly acquired shelter bringing with it additional fertility, increasing beauty, and eventual profit.

SECT. IX.

Farming Circumstances on the Western part of Division No. VIII.


FROM Vladslloo to Dixmude, and from thence to Woomen, on the border of Division No. II. the soil gradually deepens, and the productions are, as was before stated, of a nature which the lighter soils are incapable of yielding, viz. wheat, winter barley, and rape. Immediately about Vladslloo, though the soil is very light and sandy, the crops of clover are such as are not to be exceeded; and one cannot too often call the attention of the farmers of our own

countries, to the cultivation of that most important crop, which seems to be adapted to every soil, and to be wholesome and nutritious forage for every species of stock.

Here also potatoes flourish in very great perfection, and a particular sort, much resembling the ox-noble of England, is cultivated as food for cattle, yielding one hundred sacks by the *measure*, about ten tons to the English acre; while those for the table yield but sixty-five sacks the *measure*, about six tons and a half to the English acre. An excellent species of turnip is used here also, not much known in other parts of Flanders—the *Chou-rave*: in density and saccharine matter, but not in shape (being of an oblong form), it seems to vie with the Swede, and is much prized both for the table and for cattle. They pay more attention to this than to other turnip crops, in point of weeding and watering, conceiving, that if they neglected this in very dry weather, the bulb would be hard and fibrous. For garden use, they sow from March till June; for cattle, in the month of May; in which case they draw them and pack them before the frost, and seldom have reason to complain of the quality being injured.

In the vicinity of Dixmude, which bounds Division No. VIII. are to be seen abundant crops of luxuriant rape, and a handsome tract

of meadows and pasture, chiefly dedicated to dairy cows, and supplying to the market of Dixmude, and even to Ostend, what is considered the first quality of butter. In making it, the chief art is to churn frequently, at least three times a week; and, having gathered the butter, to purify it from all remaining admixture of the milk, by almost innumerable waters. The barrel churn, turning on a horizontal axis, is that which is in general use.



SECT. X.

Vegetables: the Kinds which are cultivated.

THE market of Dixmude is particularly well furnished with vegetables. The treatment of asparagus here, and generally in Flanders, differs considerably from our method: in forming their beds, they are not by any means particular as to very deep trenching, or a profusion of manure; nor, as they grow up, do they cover the beds with litter for the winter, nor fork and dress them in the spring: in the furrows they form a rich and mellow compost of earth and dung, with which, before winter sets in, they dress up the beds to the height of nearly eighteen inches from the level of the crowns, and without any further

operation (except supplying the furrows again for the ensuing season), as soon as the buds appear, they cut them nine inches under the surface, by which means, having but just reached the light, the whole of the stock is blanched and tender. The knife which they make use of, is slightly serrated, and about fifteen inches in the blade. The earthing up of asparagus planted in drills, has been for some time practised by a skilful gentleman-gardener in Ireland, with a similar effect.

To enter into the detail of the gardening system of Flanders, even with the necessary information, would not come within the proper sphere of this Report; but, as a matter of rural economy profitable in the vicinity of towns; and, in the country, contributing very much to the comfortable subsistence of the farmer and the peasant, it is worthy of general recommendation. To every cottage in Flanders, a garden of some description is attached; and according to the means, the leisure, and the skill of the possessor, is rendered more or less productive. The general principles of management, with all, are, frequent digging, careful weeding, ample manuring, and immediate succession. The rotation depends on circumstances. The chief vegetables in common use, are, parsnip, carrot, turnip, scorzonera, Savoy and jette-chou cabbage,

onions, leeks, pease, beans, and all kinds of salading, with another vegetable, called *fève haricot*, a larger species of French bean, which has a place in the field or garden of almost every farmer, and, as was mentioned in a preceding part of this Report, being sliced down, pod and seed, is made a chief ingredient in all farm-house cookery.

A well-managed cottage-garden is generally attended with other circumstances of orderly arrangement. Even Great Britain might derive advantage from following up more strictly this branch of rural economy ; and if landed proprietors could induce their tenantry to adopt it generally, besides affording occupation to the younger part of the family, and contributing to their comfortable support, it might become no mean instrument in establishing cleanliness, neatness, and regularity, both in Great Britain and Ireland.

CHAP. XIII.

SECT. I.

Farming Circumstances in the Neighbourhood of Gistel, in Division No. VIII.

IT will be recollected, that in mentioning an experiment made by Mr. Auguste Wieland, as to the comparative merit of the drill and broad-cast husbandry, the saving of seed, increase of produce, and preparation of the soil for future crops, were all in favour of the former method. It was particularly satisfactory to visit at Westkerke, in the neighbourhood of Gistel, the particular farm upon which those experiments had been made; and to learn from Mr. Wieland himself, the method by which he reclaimed this soil, originally unproductive.

The farm, on the western verge of Division No. VIII. is of a strong quality of soil, and, previous to its improvement, was flat, retentive of water, given to rushes, and yielding crops of corn and pasture so very bad, that the occupying farmer was unable to hold it at six florins the *measure*, about nine shillings by the English acre.

Mr. Wieland took it into his own hands in 1807, and in about three years let it for fourteen

florins the *measure*, about twenty-one shillings by the English acre. The method he pursued, consisted chiefly in dividing the fields, by furrows of three feet wide, into distinct *sets*, or compartments of sixty feet wide each, and dressing those from the sides to the centre, or crown, in a raised and rounded form, so that the rain-water should run off, and be conducted to the boundaries of the field, and from thence to a sufficient fall at the extreme enclosure of the farm. The elevation of the centre was about two feet above the level of the extreme sides of the sets respectively; and particular care was taken to lower the head-ridges, so as to remove all impediment to the running off of the water from all parts of the field. This operation, as well as that of dressing up the earth from the sides to the centre of the broad sets, was executed by means of a simple but useful implement, which deserves particular attention.

SECT. II.

Description of the Mouldebaert—and Manner of reclaiming Wet Land.

THIS implement is called the *mouldebaert*, and resembles a large square malt-shovel; it is strongly prepared with iron on the lower side;

and is drawn by a pair of horses with swingle-trees. It is unnecessary to go more minutely into a description of the implement, as the annexed engraving, laid down by a scale, will explain its form and dimensions*. Too much, however, cannot be said of its efficacy in removing soil from one part of the field to another, in the easiest and most expeditious manner, which has established its general use in Flanders, and ought to recommend it every where.

The person who drives with long reins, by pressing moderately on the handle as the horses go forward, collects, and transports about 5 cwt. of earth to the place where it is to be deposited; which is effected in the most summary manner by his letting go the handle. This causes the front, or edge of the machine, to dip, and catch against the ground, whereby it is at once inverted and emptied of its load. The extremity of the handle, to which a rope is affixed, by this inversion strikes against, and rests upon the swingle-tree bar, and in this manner the mouldebaert is drawn along towards the accumulated earth, when, by taking up the rope, the driver draws back the handle, collects his load as before, proceeds to the spot which is to receive it, and the horses are never for a moment delayed.

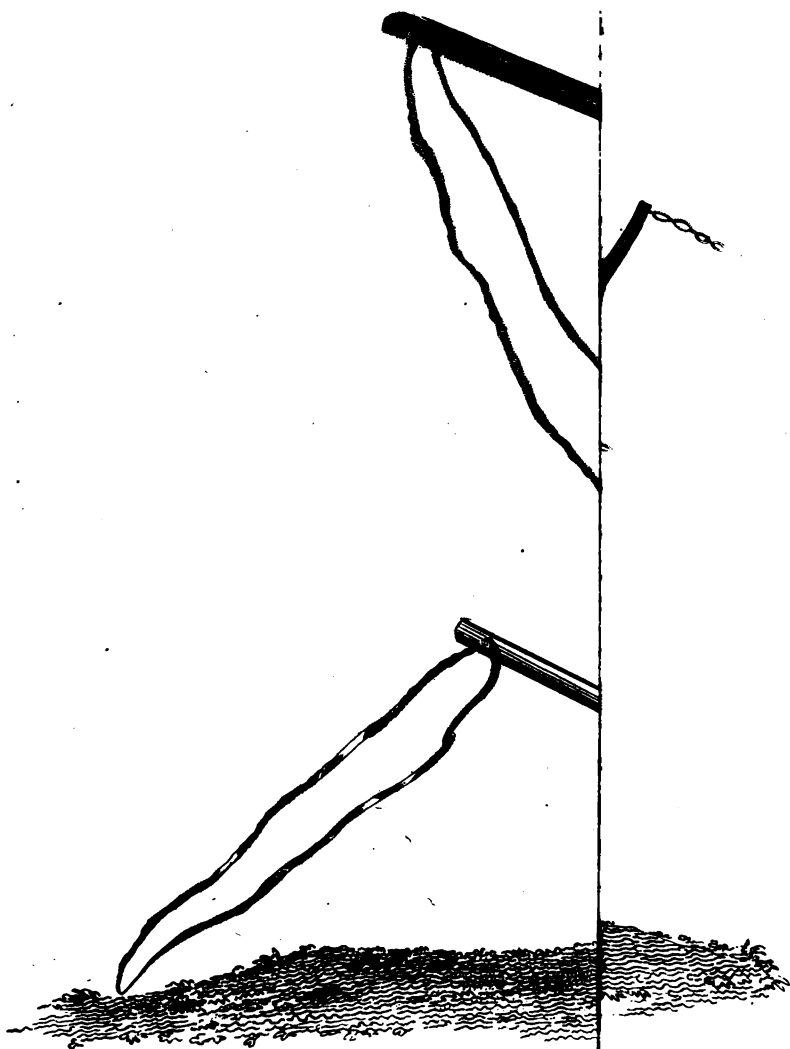
The saving of time and labour, in filling, and

* Vide Plate III., Figures 3 and 4.

emptying, gives this implement a decided superiority over the cart ; nor is the ground so much injured by this, as by wheels. How well may it be applied in manuring a field with compost from the head-ridges ; and how valuably, in most cases of levelling, either in the farm or the demesne ?

Having formed the broad sets as has been mentioned, by means of this valuable implement, the next chief care was to get rid of the surface-water, by cutting trenches across them with the spade, where required, and by clearing up all the old ditches to give it free passage, an operation repaid by the manure thus procured, which being turned and exposed to the atmosphere for a season, was spread upon the surface with good effect. The improvement of this land, however, was only to be compassed through the medium of a perfect fallow. In autumn the fields received a light ploughing and harrowing, and the sets were then formed : in December, a deep ploughing, to lay the soil up high to the influence of the frost ; at which period the transverse furrows were cut to let the water run off. In March another deep ploughing and harrowing, after which the manure raised from the ditches was spread upon the surface, so as to preserve the rounded form of the sets. In August, quicklime was spread in a pulverized state, at the

The bottom is plated strongly with



rate of sixty hectolitres to the *measure*, about one hundred and fifty-six bushels (Winchester) to the English acre; and laid under, by a light ploughing. This terminated the preparation, and the succession of crops took place as follows:

- | | |
|--|--|
| 1st year, Winter barley, | } No manure, but the previous
liming, &c. |
| 2d, Beans and Flax,
equal moieties, | |
| 3d, Winter barley, with a moderate application of urine,
in the spring, | |
| 4th, Beans, vetches, and turnips, | |
| 5th, Wheat or oats, with clover, | |
| 6th, Clover, manured with ashes, | |
| 7th, Clover cut once, and ploughed under, | |
| 8th, Potatoes, with farm-yard manure. | |

From this the same succession begins again; but the land received a second dressing of lime. The greatest attention was paid to the clearing up of all channels, for the water to pass freely; great attention also, as is always the case in Flanders, to the removal of weeds, and that the foregoing operations both of ploughing and sowing, should be performed in dry weather.

By these means, this intelligent gentleman succeeded in producing crops that amply repaid him his entire cost, and enabled him eventually to let the farm to a good tenant, in the proportion of seven to three beyond the original rent.

SECT. III.

Superiority of Drilled Beans at Westkerke.

THE present occupier of the above-mentioned farm, Pierre Vandamme, was preparing to sow his bean crop in the drill method, at first introduced by his landlord Mr. Wieland, and which he has regularly practised since he became his tenant. The produce beyond that of his neighbours, stamps its excellence. The former rainy season furnished an additional stimulus to the adoption of this method, in the remarkable superiority of the crop beyond those sown broad-cast.

The broad-cast beans of a rich polder, in common seasons yielding from seven to eight hoets, were in the last not more in produce than one-fourth of that quantity by the *measure*, whilst Vandamme's drilled crop at Westkerke yielded six hoets and a half, as appeared by the following entry in his day-book, amongst other matters, and without any expectation on his part of its being enquired into or inspected.

" Bean soil, four *mesures*, number of sheaves 3500, of which 1220 sheaves, threshed, yielded nine and a half hoets, which is 875 sheaves, and about six and a half hoets to the *measure*."—This would be upwards of three and a half quarters on the English acre, and about nine and a half bar-

rels on the Irish acre. In a good season the produce would probably have been a third greater ; even so, though it proves the superiority of the drill beyond the broad-cast crop of Flanders, yet does it also manifest, what has been before observed, that the bean crop in Flanders is not as productive as in our countries, and is one of those from which the Flemish farmer derives, and expects, the lightest return.

Vandamme's farm contained about 29 English acres : it was worked by two beautiful mares in high condition, bred by himself, and breeding fine foals, without any interruption of the farm work—an important fact, that by good feeding and careful management, the farmer once appointed with a number of working mares proportioned to the extent of his farm, besides having his work regularly performed, may have the opportunity of selling many horses, without the necessity of buying any ; but this is only to be effected by good care, equable work, and proper feeding. The dietary of the work-horse has been already mentioned, and shall be noticed again in another place.

Upon this small farm, three cows and two yearling heifers constitute the remainder of the stock ; nevertheless, from the urine cistern, with which the privy communicates, and 3cwt. of rape-cake, the farmer, exclusive of his other ma-

nure, contrives to dress about three English acres of rye and turnip. Here is also a productive orchard, neat garden, and comfortable house; and even within the limit of thirty acres there is every appearance of good and prosperous farming.


SECT. IV.*Further Farming Circumstances near Gistel, and Eastward in Division No. VIII.*

AN adjoining farmer, of the name of Keemel, is upon a greater scale; upwards of a hundred English acres, reclaimed from the same state as the former farm, and nearly by the same process, and upon which also the same succession is observed. His stock consists of five work-horses, twenty cows, and ten head of young cattle. By the admixture of 8 cwt. of rape-cake in his urine cistern, he manures from it, exclusive of his other resources, about nine English acres, and is enabled upon the whole to complete about twenty-two acres, one-third of the arable land; the habit of this part of the district being, that every part of the farm which is under the plough, shall have had the benefit of manure once in three years. This man is particularly assiduous in collecting manure, and has a tolerably fertile

source in an extensive sheep-house, where 120 ewes, with their lambs, were littered down, and fed in racks with rye straw, at which the lambs picked freely, and also had recourse, with their dams, to a trough of rape-cake soup, to which was attributed the good condition of the sheep, which certainly exceeded that of other flocks. Those sheep, however, had certain hours allotted for pasturage, which, under the controul of the shepherd and his sagacious dog, is limited to the verges of the corn fields or roads ; nor are they ever permitted to commit the slightest damage by encroachment. The rape-cake soup is merely rape-cake dissolved in water, in equal quantity with bean or barley meal.

Here the *mouldebaert* was used with great effect, drawn by excellent horses, and performing rapid work ; admirable ploughing also with the little single-handled plough, without a leader, drawn by a pair of horses, and at the rate of an English acre and upwards in the day.

This farmer is remarkable for good grain, and never fails to bring his seed-corn, every year, from a considerable distance ; either from Holland or Brabant. He also makes use of lime as a manure, at the rate of 150 bushels (Winchester) to the English acre, and finds it the most efficacious on that part of his land, which is of a strong quality of soil. His horses are powerful,

and well kept, and the whole of his establishment well conducted. It is difficult to signalize individual industry in a country where all are industrious; there are, however, shades of difference, and the high reputation in which this man stands with his landlord, and the neighbouring farmers, seems to have been fairly acquired.

These farms lie near Gistel, on the western verge of Division No. VIII. and partake of that strong description of soil which prevails in the adjoining Division No. I. Previous to their being reclaimed, they were of that retentive, poor, and rushy quality, which in Flemish is termed *bleck*, and in French, *terre glaise*, with a substratum well known in Ireland by the name of *lacleagh*, from one to three inches in thickness, as compact as a flag, and wholly impervious by water. This crust, however, when once broken through, never again reunites, and if brought to the surface, it becomes mellow by the action of the air, and contributes usefully to the staple of the soil. To break through this latent crust, was the object of Mr. Wieland's very deep ploughing: in his case it was to be reached within ten or twelve inches from the surface; in others, particularly in Ireland, it lies in many instances much deeper, and is only to be penetrated by spade-work, by a second plough in the

track of the first, or, as it has been effectually performed in one instance, by a great plough called *the miner*, with a spear-pointed share, and without a mould-plate, drawn by eight oxen. This potent implement, following in the track of a four-horse plough, executed the work so perfectly, that the surface-water has never since rested upon the land to which it was applied. If the stratum under this compact substance, be of retentive clay, it is in vain to attempt so expensive an operation; but if, as in most cases, it happens to be of a porous nature, the improvement would probably be effectual, without the assistance of the rounded sets. However, in a flat country, where other causes may operate to the injury of the soil by too great retention, the method adopted near Gistel, and in many other parts of Flanders, seems to be a most judicious one.

The eastern side of the farm last spoken of, is lighter and more sandy, which quality of soil increases in that direction to the extremity of the Division. As you approach Oostcamp and Bruges, it appears to be almost a pure sand; and yet the finest crops of rye, clover, potatoes, and carrots, are to be remarked. There is nothing calcareous in this sand; its fertility seems to rest wholly upon the annual application of manure, particularly of the liquid sort, which is

the most suitable. At Bruges the soil changes, and crossing the canal, you get forward into a country of strong clay (Division No. I.) yielding oats, beans, and wheat. Even on the sandy side of the canal, in No. VIII. at Evanspruck, in the Commune of St. Cruys (where, however, a tendency to a stronger soil prevails), excellent white wheat was grown, 700 sheaves to the *measure*, each hundred calculated to yield one hoet of clean corn. This, by the English acre, would be upwards of 31 Winchester bushels, and upwards of eight barrels by the Irish acre. This, for very indifferent soil, is a great return.

The reaping of this field, which contained about five English acres, was executed in three days by two labourers, using the Hainault scythe, which shall be noticed in the following Section.


SECT. V.*The Hainault Scythe.*

THIS valuable implement is better formed than those which are in use in England and in Ireland. The handle is but fourteen inches, with a shield for the hand of four inches and a half, in all, eighteen inches and a half: the blade is two feet three inches in length; in the formation of which consists the chief improvement, the

point being a little raised, and the entire edge bevelled upwards, so as to avoid the surface of the ground; by these means the sharpening stone is not so frequently required, and the handle of the crook being of hard wood, is used as a scythe board.

The field was disposed in rounded ridges, or broad sets of eighteen feet. The two men worked along the ridge at an interval of a few paces, each compassing nine feet, which they cut down at seven or eight strokes each, and formed into four sheaves, across the entire set.

To those who have not seen this operation, it may be necessary to explain, that it takes place by pressing the back of the crook against the standing corn in the direction of the wind, and by cutting close to the ground with a free swing (less by force, than by the impetus of the scythe), till in three or more strokes, according to the thickness of the crop, a sufficiency be severed, which, when caught in the inverted hook, with a portion of the standing corn against which it rests, and dressed back with this addition to the point of commencement, will form a sheaf, by gathering and keeping the heads in a line by means of the crook, and closing up the butt of the sheaf with the scythe, when with both, by a little adroitness, and by the assistance of the foot, a perfect sheaf is placed ready for binding, and precisely where it ought to lie.

This mode of reaping is general in Flanders, and expedition cannot be supposed its only recommendation, in a country where hands abound, and manual labour is profusely used. The practice must possess some other intrinsic merit ; nor can the eye of the farmer be at a moment's loss to discover it in the extreme neatness and regularity of the work, the additional length of straw, and the almost total disappearance of stubble, so necessary to the cleanliness of the future ploughings, which commence as soon as the crop is removed. Even in point of expedition, without considering its economy, the use of this implement is considered of great importance in Flanders, where it is a maxim in farming, that the different works shall not be suffered to encroach one upon the other ; and where, for safe and quick harvesting, the presence of fine weather must be used to the best advantage. But in many places, where labourers are few, and of course at a high rate, its economy becomes an object, being at the lowest calculation a saving of one half beyond the sickle.

To the industrious labourer also, who works by the piece, the use of the Hainault scythe would prove a source of profitable earning. Farmers in most countries are in the habit of reaping occasionally, by the acre, and would, of course, even at the usual price, prefer the better

and more expeditious performance of the work, whilst the labourer, by means of this instrument, would have it in his power to earn double wages, with greater satisfaction to his employer.—This would at all events be the result of its first introduction, and if the practice should become general, the remuneration would find its fair level; and, both for private and public advantage, the harvest be got in in better time.

In that part of Holland which borders upon Flanders, the Flemish labourers crowd in for this species of task-work, and, in a fortnight or three weeks, the ploughs are all at work, where within that time the crops had been growing.

It appears to me, on every account, one of the Flemish practices to be particularly recommended; and as it has been successfully tried in England by Mr. Rose, and, through his public spirit and farming zeal, transplanted into Ireland, it is to be hoped, that, with the high authority of all Flanders as an example, the adoption of it will become general in these countries.

SECT. VI.

Farming Circumstances on the Verge of
Nos. VIII. and IX.

IN this direction the soil becomes more and more sandy and unfertile, but in proportion to its deterioration, is the increased industry of the occupiers ; so much so, that though the species of crops may vary, the produce seems to be pretty nearly at par with that of better land.

This tract is bounded by the great canal from Bruges to Ghent, and of course accessible by a cheap transport of manure from the towns and villages near its banks. Of this the farmers avail themselves abundantly, and produce excellent crops of potatoes, oats, clover, flax, rye, buck-wheat, rape, and carrots ; turnips also, universally, but in point of produce, not to be compared with their other crops.

At Beernem, the Baron de Serret, proprietor of a considerable extent in that district, and one of the chief and most intelligent agriculturists of the country, upon his own demesne, comprising nearly four hundred statute acres of a soil naturally barren, has effected, by great perseverance, an improvement in the English style, which does credit to his taste and skill.

The quality of the soil here is as follows :

Surface—Twelve inches of light sand.

Subsoil—Three feet of pure barren sand.

Next Stratum—Seven or eight feet of clay, with siliceous stones.

Stratum below that—A blue sand.

This variety appeared in sinking the site of the house, and in forming a sheet of water in the demesne ; but what appeared particularly singular, is, that the sand from the excavation of both, spread about three inches thick over an extent of heathy waste, and sown with fir-seed, has yielded a most healthful and luxuriant crop of trees, many of them nine feet high in six years from the time of their being sown. Many other flourishing plantations of different ages, ornament this ground ; extensive woods, also produced from the seed sown upon the pared and burned surface of the waste land, which is the most certain and usual process.

The intelligent proprietor of this demesne, being a practical botanist, has collected many varieties of trees, shrubs, and flowers. Upon the trees, as most profitable, a minute attention is bestowed ; that, however, is not singular in Flanders, as has been already remarked ; but those who are scientific as well as practical, have the better opportunity of diffusing useful information.

In a former part of this Report was noticed the attention of the Government to the preservation of plantations, by enforcing the destruction of caterpillars: the dévastation which they sometimes cause, has been witnessed in Ireland, almost to the annihilation of the trees they infested; but the Baron de Serret has remarked other insects, most injurious to trees of the fir tribe, and pointed out their depredations.

SECT. VII.

Insects injurious to Trees of the Fir Tribe.

THEY are of two kinds; both effecting the mischief by the destruction of the sap.

Those which are most numerous, and most injurious to the Scotch fir, are the *larva* of a nocturnal butterfly, with wings of a muddy white, and with orange spots. This colour, and the horizontal position of the wings, gives them the appearance of the bark of the branches, upon which they fasten themselves closely during the day. They deposit their eggs among the buds at their extremities. The turpentine or resin which oozes from the buds, protects the eggs till the insect is brought out by the warmth of the atmosphere, when vegetation commences. It then inserts itself into one of the buds, which

at this time begins to shoot, and lodging itself in the centre of it, perforates the young shoot up and down, till it either breaks off or withers. The cockshoot is generally the first assailed, and the trees infested by those insects, are found without leaders the ensuing year, stunted, crooked, and in a state of decay. The stage of transformation into a nymph, which takes place in about six weeks, in the branch of which the insect had taken possession, terminates the mischief, but not its effects.—The other is a little black insect (*the dermestis piniperda* of Linnaeus).

This only attacks the old branches, and can be traced by their total failure, perforating into them and fixing in the sap, which it destroys in both directions.—The Weymouth Pine is that which is principally assailed by this latter insect. Against the ravages of either, no remedy has as yet been discovered.

The members of the Agricultural Societies, and all intelligent proprietors, have been called upon by the Baron de Serret, to give the subject their best consideration, and to make such suggestions and experiments as may lead to something effectual; and to press on them the necessity for such attention, he states, that by insects of the same tribe, though not in all respects similar, the forests of Schlier and Ebendorff, in Germany,

had been destroyed some years ago. To prevent injury by caterpillars, he directs the attention especially to trees of the fir tribe; for, however general the depredations of those insects, from the oldest oak to the meanest shrub, yet most other trees will recover the loss of their leaves and buds; whilst the fir, if totally stripped of either, uniformly dies.

SECT. VIII.

Farming Circumstances at Beernhem.

WITH respect to *farming* works, the Baron de Serret is equally attentive, though they are conducted on a small scale; his woods and ornamental improvements occupying the chief part of his demesne.

He does not attempt wheat, but produces excellent rye, at the rate of thirty-five Winchester bushels to the English acre; but this was on ground well manured, where potatoes had been the year before, and is beyond the common average. It serves, however, to shew what may be done upon the poorest soil by industry and manure. His potatoe crop was not equally luxuriant, though a very fair one, being by the *measure* seventy-four sacks, of two hundred and forty Flemish pounds each, about eight tons by

the English, ten and a half by the Scotch, and thirteen by the Irish acre. As to the best mode of planting potatoes, whether by sets (sections of the bulb), or by whole potatoes, the Baron is, from frequent and accurate experiment, decided against the former method, and finds that in planting them entire, a selection may be advantageously made in point of size, the middle size being that which should be preferred.

Upon a field uniform in its quality of soil, and equally manured, he planted one third of the space with sets or sections in the usual way, one-third, with whole potatoes large, and one-third, with whole potatoes of middling size. The culture was precisely the same in every respect, and upon digging and weighing the produce of each compartment, the result was in proportion, as follows :

Produce of potatoes planted by sets,	8
Ditto by whole potatoes large,	10
Ditto by whole potatoes of middling size,	12½

The potatoes thus beneficially selected, were of a rounded form, and of about an inch and a half in their smallest diameter.

In growing the sugar-beet, he earthed up some of the rows, and stripped down the mould for about two inches from others, and found the latter method the best. He considers the sugar-

beet to be the mangel-wurzel merely, but that in the sandy soil it acquires additional sweetness. In his flax crop he manured one ridge with salt, and there was no apparent difference between that and the remainder of the field.

At the suggestion of the Writer of this Report, the Baron took the trouble to collect a considerable quantity of bones as a manure, (wholly untried and unknown in Flanders), and has promised to communicate the result.

With a gentleman of his science and skill, every experiment is brought to a fair test, and it is incalculable, what service those who are similarly gifted, and equally zealous, may have it in their power to render to any country in which they happen to reside. His sheep flock, consisting of about one hundred, were deserving of notice, as the first, second, and third cross of merino upon the long woolled ewes of the country. His ram was from the Rambouillet flock, having wool of a very fine texture, and a tolerably substantial frame. The improvement was remarkable, both in point of wool, form, and flesh, and his intention was to continue the cross-breed. The same experiment was tried by others, but not with similar success, nor has the merino blood spread much in Flanders, notwithstanding the facility with which it might have been procured from France: any specimens of the pure blood, which

came under observation, were very poor, and strongly exhibited the three general defects—bad condition, bad carcass, and bad feet. Indeed, Flanders is not to be spoken of as a sheep country, as shall be hereafter explained—witness the want of good mutton in its chief markets.

The Baron de Serret's sheep-fold, by which a part of his lawn was much enriched, is well constructed. It consists of six pieces of railing, each twenty-one feet in length, and four feet and a half high, with short axles and a pair of low wooden wheels at the extremities of each of the pieces, thus affording an easy opportunity of forming them into one or more enclosures or subdivisions, according to circumstances, and of moving the whole with great facility.

In this place, it is but common gratitude to acknowledge the valuable services of the Baron de Serret, whose patience and politeness permitted so many enquiries, and to whose local knowledge and judgment, the Reporter is indebted for much information.

SECT. IX.

Farming Circumstances in the Vicinity of Beernhem.

THERE are some farms in this neighbourhood from fifty to one hundred acres, well supplied with manure by the great canal, and notwithstanding the lightness of soil, wheat is sometimes sown, but not with the best effect; oats, clover, rye, rape, and turnip, form the usual succession; excellent crops of carrots, and flax, are likewise produced. The species of carrot in general use for the field, is white, and comes to a considerable size, weighing from two to three pounds each. About twenty-five pounds weight is given to each work-horse in 24 hours, in lieu of hay; but the regular quantum of oats is not diminished. They are thinned by hand, and set out at regular distances, about eight inches in the row, and twelve in the intervals, which are formed by the hoe in straight lines across the ridge, or broad-set of eighteen feet.

The horses fed in this way without any hay, are in particularly good condition; but let it be recollected, that rye-straw in the sheaf, and chopped straw mixed with the oats, are never omitted to be given.

SECT. X.

Management of the Flax Crop.

THE treatment of the flax crop differs not very materially from that in our countries ; the chief variance is in the rippling off the seed, shortly after the flax is pulled, and this is done by means of an instrument of octagon form, which consists of a heavy log, two feet by two and a half, and six inches thick, with eighteen upright teeth of quarter-inch square bar iron, and fifteen inches in length, at about an inch and a half asunder : through these the heads of the flax are drawn quickly till the seed is all stripped off, when the flax is sent to steep, and very great attention is bestowed on the seed, by daily and repeated turning in the sun, to evaporate its moisture in that green and unripened state. This attention, however, is not bestowed in vain ; the seed thus saved, though held in lower estimation than that which they import, is nevertheless safely substituted in a scarce or dear season, and at all events, is productive of a fair profit at the oil-mill, yielding about seven Winchester bushels of seed to the English acre. When sold on the foot, the purchaser is entitled to this profit, as well as to that upon the fibre. The farmer is also obliged to board the persons employed, to provide water for steeping, ground for spreading,

and carts for transporting the produce, in those several operations ; and for this he receives 150 florins by the *measure*, about 11*l.* 10*s.* by the English acre. Instead of beetling the flax, as with us, they pound it, upon a barn-floor, with a grooved log attached to an oblique handle. Their method of steeping is nothing more than common, but a particular mode has been suggested, and put under experiment, by a regular commission from the Government. The report of the Commissioners is extremely favourable, and yet the practice has not been generally adopted. Its object is, to preserve an uniform strength and soundness of fibre, by a more equable putrefaction. The detail shall be given in the Appendix*. The person who claims the merit of the discovery, professes to have seen and studied Mr. Lee's method of preparing flax without steeping or dew-rotting, and to prefer his own. Mr. Lee's machinery has not been adopted by the Irish manufacturer to any extent, and yet those who are very capable of judging, approve it highly.

It is perhaps better, that new practices, however valuable, should be slow in their establishment, lest too hasty a reception should create as sudden a disgust, from diffidence of the improvement and ignorance of the detail ; nor can the lower classes, whose best exertions are necessary

* Appendix, No. III.

to their bare subsistence, be expected to embark in any risk, or to adopt any change that has not been sanctioned by frequent, decisive, and successful trial. It is, nevertheless, incumbent on those who have talent to appreciate, and means to investigate the value of a suggested improvement, to put it to fair and impartial experiment, for the public good, and for the benefit of their tenantry, who look up to them for information.

SECT. XI.

Farming Circumstances in Division No. IX.

Culture of Spurry.

THIS Division being of the same light and sandy quality with Nos. VII. and VIII. as before mentioned, is cultivated likewise with similar industry and success. In the vicinity of Thielt, upon a farm of thirty acres, the occupier generally contrives to have

	<i>Acres.</i>
Of rye and oats	10
Flax	3
Rape	4
Clover	4
Potatoes	2
Beans	1
Pasture, &c.	6
	<hr/>
	30

In the vicinity of Waerschoot, and very generally in the sandy districts, buck-wheat and spurry, productions suitable to a poor soil, are uniformly introduced into the rotation. One great facility attending both these crops is, that they can be produced without manure, and are generally taken in the last year of the course. Spurry, indeed, is so quickly had, and is of such short duration, that it is often made to take an intermediate place between the harvest and the spring sowing, without any strict adherence to the regularity of succession. It is sown sometimes in the spring, but in general in the autumn, immediately after harvesting the corn crops. One light ploughing is sufficient, and as the grain is very small, it is but very lightly covered. About twenty-four pounds of seed to the hectare, is the usual quantity, which is about nine pounds and a half to the English acre. Its growth is so rapid, that in five or six weeks it acquires its full height, which seldom exceeds twelve or fourteen inches. The crop is of course a light one, but is considered of great value, both as supplying a certain quantum of provender at very little cost, and as being the best food for milch cows, to improve the quality of the butter. It lasts till the frost sets in, and is usually fed off by milch cows tethered on it, but is sometimes cut, and carried to the stalls.

In case of a spring sowing, the crop is occasionally made into hay; but from the watery nature of the plant, it dries in considerably, and upon the whole, is much more advantageously consumed in the other manner. It is indigenous in Flanders, and except when cultivated, is looked on as a weed. Its botanic name is *spergula arvensis*.

SECT. XII.

The Culture and Value of Buck-Wheat.

BUCK-WHEAT (*Blé Sarazin*), botanically *Polygonum Fagopyrum*, is a regular crop in all the rotations of those sandy districts; it is preceded by frequent ploughings, but is produced without manure: though considered of so little importance in Great Britain, as to be scarcely used in Scotland or England, and in Ireland not at all; yet in Flanders it abounds, from the conviction which prevails of its profit and utility. Any crop to be procured without manure, must be valuable to the Flemish farmer, in proportion to the saving of that expensive article; and in this point of view, becomes desirable; but this one is also intrinsically useful, as is testified by its price at market, where it is only exceeded by wheat, and beans, with which latter it is nearly upon a par, sur-

passing barley a little, and oats in a great degree*.

The chief application of buck-wheat is to the feeding of swine and poultry, for which it is pre-eminent; it is also used in flour; as a constituent in the liquid nourishment prepared for cattle and horses; and bears no inconsiderable share in the diet of the peasant. Formed into a cake without barm, it is a very wholesome, and not a disagreeable species of bread; but it is necessary to use it while fresh, as, if kept, it would turn sour sooner than bread made of barley, rye, or wheaten flour. Its blossom is considered to afford the best food for bees. If cut green, it yields good forage, and if ploughed in when in flower, it is thought one of the best vegetable manures in use†.

Its growth is so rapid, that it may be sown late; if on wet ground, high ridges should be formed, as too much moisture is injurious to it; nor should it be sown till after the late frosts, by which it would be affected. It is cut before it becomes fully ripe, when the most forward grains begin to fall.

* By a market note of Bruges, April 1818, wheat was 32 francs per hectolitre, beans 18, buck-wheat 17½, barley 14, and oats 10.

† It is also said to be used in distillation; but this is not generally admitted to be the case.

Having gone through the chief productions of Divisions Nos. VII. VIII. and IX. the average seed and produce shall be stated.

SECT. XIII.

Average of Seed in Divisions Nos. VII. VIII. and IX.

IN these Divisions, the *measure* is sometimes the denomination by which land is let or sold ; but the hectare being the most general, the proportions of seed and produce, rated according to that, will appear thus :

Quantum of Seed per Hectare.

Rye.—One hectolitre per hectare.

This, by the English acre, would be nearly $1\frac{1}{4}$ th Winchester bushel ;

By the Scotch acre, one and a half Winchester bushel ;

By the Irish acre, seven stone $\frac{3}{4}$ th, of 14lb. to the stone.

Wheat.—One hectolitre per hectare.

This would be, by the English acre, nearly $1\frac{1}{4}$ th Winchester bushel ;

By the Scotch acre, nearly one and a half Winchester bushel ;

By the Irish acre, $1\frac{1}{2}$ th Winchester bushel, or about eight stone, of 14lb. to the stone*.

* The difference in weight of seed rye and wheat, proportioned to the Irish acre, the Flemish measure being the same in both cases by the hectare, results from the difference of weight per Winchester bushel between these two species of grain.

144 *Average of Seed in Nos. VII. VIII. and IX.*

Oats.—Three hectolitres per hectare.

This would be, by the English acre, $3\frac{1}{4}$ th Winchester bushels ;

By the Scotch acre, $4\frac{1}{4}$ d Winchester bushels ;

By the Irish acre, five and a half Winchester bushels, or about $15\frac{1}{4}$ stone, of 14 lb. to the stone.

Buck-wheat.—One hectolitre per hectare.

This would be, by the English acre, nearly $1\frac{1}{4}$ th Winchester bushel ;

By the Scotch acre, nearly one and a half Winchester bushel ;

By the Irish acre, $1\frac{1}{2}$ th Winchester bushel, or about eight stone, of 14 lb. to the stone.

Flax.—Two hundred and twenty-seven litres per hectare.

This would be, by the English acre, about two and a half Winchester bushels ;

By the Scotch acre, about three and a quarter Winchester bushels ;

By the Irish acre, about four Winchester bushels, equal to 16 pecks, or 64 pottles.

Clover.—Seven kylogrammes per hectare.

This would be, by the English acre, six pounds and one-fourth ;

By the Scotch acre, nearly eight pounds ;

By the Irish acre, $10\frac{1}{4}$ th pounds.

Turnips.—Six kylogrammes per hectare.

This would be, by the English acre, about five pounds one-third ;

By the Scotch acre, about six pounds and a half ;

By the Irish acre, about eight pounds and two-thirds.

SECT. XIV.

*Average of Produce in Divisions No. VII. VIII.
and IX.**Produce per Hectare.*

Rye.—3096 litres per hectare.

This would be, by the English acre, thirty-five and a half Winchester bushels ;

By the Scotch acre, about forty-five Winchester bushels ;

By the Irish acre, eleven barrels and a half, of twenty stone to the barrel.

Wheat.—2000 litres per hectare.

This would be, by the English acre, twenty-three Winchester bushels ;

By the Scotch acre, $29\frac{1}{2}$ th Winchester bushels ;

By the Irish acre, nearly eight barrels, of 20 stone each,

Oats.—2500 litres per hectare.

This would be, by the English acre, nearly twenty-nine Winchester bushels ;

By the Scotch acre, near $36\frac{1}{2}$ ths Winchester bushels ;

By the Irish acre, nine barrels and a half, of 14 stone to the barrel.

Buck-wheat.—2064 litres per hectare.

This would be, by the English acre, nearly twenty-three and three-fourths Winchester bushels ;

By the Scotch acre, $30\frac{1}{2}$ th Winchester bushels ;

L

By the Irish acre, nearly thirty-eight and a half Winchester bushels, which, at 56 lb. each, will amount to more than nine and a half barrels, of 16 stone each.

Flax and Clover—Yielding both seed and substance, are not averaged here, but are noticed in a subsequent Division;—and *turnips*, being so very unequal in the return, and not precisely noted by the farmer, have not been here regularly estimated as to the average produce.

In these Divisions, notwithstanding the sandiness of the soil, the produce seems to keep pace with that of more fertile districts, except in the article of oats, in which the deficiency is remarkable, as well as the increased quantity of ~~wheat~~ made use of; nor is it by any means of good quality; indeed this is the species of corn in which Flanders is the most deficient.

The average rent of land throughout these Divisions is forty-one francs per hectare, which is, at 24 francs to the pound sterling, 18s. 10½d. by the English acre.

Labour is from twelve to fourteen pence a-day in summer, and from ten to twelve pence a-day in winter.

We shall now proceed to the consideration of the next Division.

CHAP. XI.

SECT. I.

DIVISION N° X.

Boundaries, Soil, general Produce, and Rotations.

THIS Division is bounded on the east by part of the Dutchy of Brabant ; on the west by Waermaerde, Elsegem, and Waereghem ; on the north by Deinze, Oustezeele, Seven-Ecke, and Tamise ; and on the south by a part of French Flanders.

Its chief places are, Alost, Termonde, Renaix, Gramont, and Ouseghem.

This Division is almost surrounded by the Scheldt and the Dendre, which rivers have, in process of time, formed upon the low grounds a soil, in which clay seems to predominate, but with a strong proportion of sand and alluvial deposit. The higher lands, from their sandy quality, are considered to have been the ancient downs, or natural embankments, which for centuries back, the industry of successive occupiers has contributed to level and bring into cultivation.

148 *Boundaries, Soil, Produce, and Rotations.*

The chief produce of this Division consists in rye, oats, wheat, flax, clover, buck-wheat, and potatoes; turnips and beans are also occasionally introduced. In the richer soil the succession is as follows:

1st, *Potatoes*—With 35 carts of farm-yard dung, (1500 lbs. of Ghent, each) per *collier*, being about $20\frac{2}{7}$ th tons, by the English acre.

2d, *Wheat*—With six carts of farm-yard dung, and four cart-loads of privy manure and urine, per *collier*, being about $3\frac{1}{2}$ tons of dung; and 50 barrels (beer measure) of urine, &c. by the English acre.

3d, *Flax, with Clover*—With 20 carts of farm-yard dung, per *collier*; and four cart-loads of privy manure and urine (or in lieu thereof, 600 lb. of rape-cake), being about $11\frac{1}{2}$ tons of dung, and 50 barrels of urine, &c. per English acre; or in case of rape-cake, $5\frac{1}{4}$ cwt.

4th, *Clover*—Top-dressed with five sacks of wood-ashes per *collier*, about nineteen Winchester bushels to the English acre.

5th, *Rye*—With 15 carts of farm-yard dung, and four cart-loads of privy manure and urine, per *collier*, being $8\frac{1}{2}$ tons of dung, and 50 barrels of urine, &c. by the English acre.

6th, *Oats*—With four cart-loads, either of privy manure or urine, per *collier*, being about 50 barrels by the English acre.

7th, *Buck-wheat*—Without any manure.

SECT. II.

Succession of Crops, where the Sand predominates in Division No. X.

IN those parts of the District wher wheat cannot be raised, the chief rotation is as follows :

- 1st, *Rye*—With thirty carts of mixed manure per collier, being seventeen and a half tons by the English acre.
- 2d, *Oats*—With fourteen carts of similar manure per collier, being eight one-sixth tons by the English acre.
- 3d, *Flax with Clover*—With three cart-loads of privy manure, unmixed, and twelve sacks of ashes, per collier, being about 179 Winchester bushels of the former, and 47 of the latter manure, by the English acre.
- 4th, *Clover*—With ten sacks of ashes per collier, being about thirty-eight Winchester bushels per English acre.
- 5th, *Rye*—With ten cart-loads of manure of every kind, per collier, being about six tons, by the English acre.
- 6th, *Oats*—With three cart-loads of privy manure (unmixed) per collier, being about 179 Winchester bushels, by the English acre.
- 7th, *Buck-wheat*—Without any manure.

Thus terminates the second system of rotation in No. X. ; into which they occasionally introduce carrots after clover, with eight carts of

dung, and thirty *tonneaux* of *courtes graisses* (a term for all short manure, of which urine is a component part) per collier, which would be about $4\frac{1}{2}$ tons of dung, and 28 barrels of *courtes graisses* by the English acre.

Their potatoes, without bringing them into a regular succession, they also take after clover in general; and with the same quantity and quality of manure as they make use of for carrots.— And upon their rye stubble they sow turnips as a second crop in the same year; without any additional manure.

Upon the first quality of soil, and into the first-mentioned succession, they introduce occasionally a bean crop after clover, with eight carts of farm-yard dung per collier, being about $4\frac{1}{2}$ tons to the English acre, and sometimes cultivate turnips as a single crop in the year after rye, with six carts of lime per collier, about $3\frac{1}{2}$ tons by the English acre.

The produce in point of weight, could not readily be ascertained; but is such as would not satisfy a British turnip farmer; indeed after deducting the attendant expences, it would be difficult to say what value remained, unless in the amassing of manure by the winter-feed of the stock. And under the present management of turnips in Flanders, it is a doubt whether the second crop system, upon stubble-ground with-

out manure, is not the better of the two :—as the expectation formed is not high, neither is the disappointment great with respect to produce ; but where an entire season is dedicated to a crop, something respectable should be the result. If the Flemish farmers were to adopt the drill system, or even the admirable use of the hand-hoe, for which England is so famous, the turnip crop would wear a different aspect ; but their broad-cast method, with mere hand-weeding, is insufficient, particularly where the ground is stinted in manure for this, more than for any other produce. And yet this crop is a striking feature in Flanders, and would be truly valuable if rendered more productive. The stucks of corn are scarcely borne from the fields, when the whole surface is green with this vegetable. In a country comparatively without pasturage, some forage must be provided for the farm stock. It is done by a great *extent*, but miserable return of turnips.

If then they are considered of such importance, as to be cherished even under this imperfect culture, how should they not be treasured, as a part of every rotation into which they can be introduced, under an improved and productive cultivation ?

SECT. III.

Farming Circumstances of Division No. X. ; with further Particulars as to the Culture of Hops.

IN the best soil, as has been mentioned, the course commences with potatoes, the preparation for which, is trenching by hand to the depth of twelve inches.

This is the shallowest limit of this operation, relying, as they do, upon the good quality of the soil ; in other places it is executed from sixteen inches to two feet in depth. The minutiae of this curious and valuable system shall be detailed in speaking of Division No. XI., where it is universally observed with the greatest accuracy.

In the soil now under our notice, it is made to supersede the necessity of ploughing for the potato crop ; and indeed for all the rest of the course, the ploughings are less frequent than in any other district ; each remaining crop of the rotation being produced by one ploughing, except flax, which requires two, and buck-wheat, three at the least.

In the second rate, or sandy, soil of the district, where rye is the commencing crop, notwithstanding a much deeper trenching, to the

depth of twenty inches, two ploughings are made to precede the sowing. Yet here the flax-crop, (which seems not to be the case in any other part of Flanders), is taken with one ploughing; the oats requiring two, and the buck-wheat three.

The flax, being but the third crop from the trenching, is probably the cause of their considering one ploughing sufficient; as the rotation advances, the number of ploughings increase.

In speaking generally of a given district, it must be understood, as of the species of soil and culture which predominates, for within a circle of a few miles, sometimes of a few acres, such varieties of both will occasionally appear, as to baffle detail. In Division No. IX. from Ghent to Ouseghem, is almost a pure sand; at the latter place, which is in Division No. X. upon its verge, the soil becomes compact and argillaceous; and here were observed potatoes in drills at about 28 inch intervals, executed by the plough—a rare instance in Flanders.

From Ouseghem to Alost, the soil is more loamy, and the crops admirable: in this quarter horse-beans are cultivated with advantage, and the clover exceeds that of other places. Beyond Alost, to the eastern limit of the Division, the soil is in one place sandy, in another compact. The country takes a new and varied appearance,

from a beautiful undulation of ground, to which in other directions, the eye is unaccustomed. In this an open-field culture is practised. The ploughing is admirably done; the harrowing not so well, the implement being furnished with wooden pins, and driven by a person who stands upon it while it works.

In this quarter, the oats are of a quality superior to those in other districts; and hops are very generally cultivated.

A detail of the culture of this useful plant has been already given. Some general directions, according to the practice of this Division, may be added. Lands intended for hops, are manured in March with compost of lime and farm-yard dung; the quantity, the same as for potatoes: a deep ploughing having then taken place, the ground is suffered to remain so for a fortnight; at the expiration of which time the roots are put in holes six feet asunder, three or four roots in each, at equal distances from each other, and are then covered with earth. The next year, in the month of March, the plants are uncovered, and cut level with the ground; they are again covered with fine mould three or four inches thick. Some farm-yard dung is likewise added, which is also covered with a layer of mould, of the same thickness as the first. About the latter end of June they are manured with urine,

and fresh earth is heaped upon the plants, to the height of two and a half, or three feet.

In the third year the same process is used as in the second, with this difference, that manure is only applied in March, when the actual state of the plants seems to require it, which consideration, (including the degree of fertility the soil may have acquired), is made to guide all future application of manure.

For harvesting, the plants are cut a few inches above the heaps, the poles taken out, and the bells plucked on the spot. Dry and sunny weather is essential to a prosperous harvest ; neither here, or in other parts of Flanders, is the manual labour sparingly bestowed.

The corn having been drawn home, many were engaged in hacking the stubble surface with ten inch hoes, both for the cleanliness of the ensuing crop, and as the means of some additional manure ; and many, in the operation of trenching, in order to re-commence their rotation.

Very little pasture is to be seen ; nor is any beast suffered to graze along the boundaries of fields or roads without being held by a rope from the horns : the docility of animals trained from the beginning to this method, renders it a service of little difficulty for a very young boy to guide and attend two cows. On narrow pathways and borders it may be better so, but in wider

bounds, if the rope were made fast, according to the system of tethering, much of the boy's time might be more usefully employed.

SECT. IV.

Average of Seed in Division No. X.

In the first quality of soil, the following is the average :

Potatoes.—Eleven sacks by the collier—

Which would be $16\frac{1}{4}$ cwt. by the English acre ;

23 cwt. by the Scotch acre ;

$29\frac{1}{2}$ cwt. by the Irish acre.

Wheat.—Three mesures de Gand by the collier—

Which would be $7\frac{1}{2}$ th stone, by the English acre ;

$9\frac{1}{8}$ th stone, by the Scotch acre ;

$11\frac{1}{8}$ th stone, by the Irish acre.

Flax.—Three and a half mesures de Gand by the collier—

Which would be 8 pecks, by the English acre ;

$10\frac{1}{2}$ th pecks, by the Scotch acre ;

13 pecks, by the Irish acre.

Clover.—10 lb. de Gand by the collier—

Which would be $8\frac{1}{2}$ lb. avoirdupois, by the English acre ;

11 lb. avoirdupois, by the Scotch acre ;

14 lb. avoirdupois, by the Irish acre.

Rye.—Two and a half mesures de Gand by the collier—

Average Seed in Sandy Soil of Division No. X. 157

Which would be $1\frac{1}{4}$ Winchester bushel, by the English acre ;

$1\frac{1}{4}$ th Winchester bushel, by the Scotch acre ;

9 stone of 14 lb. by the Irish acre.

Oats.—Four mesures de Gand by the collier—

Which would be $2\frac{1}{4}$ th Winchester bushels, by the English acre ;

$2\frac{1}{4}$ th Winchester bushels, by the Scotch acre ;

$10\frac{1}{2}$ stone, of 14 lb. by the Irish acre.

Buck-wheat.—One mesure de Gand by the collier—

Which would be $\frac{4}{5}$ ths of a Winchester bushel, by the English acre ;

Three-fourths of a Winchester bushel, by the Scotch acre ;

Nine-tenths of a Winchester bushel, by the Irish acre.

SECT. V.

*Average Seed in that part of Division No. X.
where the Sand prevails.*

Rye.—Sixty-two litres by the collier—

Which would be one and a half Winchester bushel, by the English acre ;

Two Winchester bushels, by the Scotch acre ;

Nine and a half stone, of 14 lb. by the Irish acre.

Oats.—120 litres by the collier—

Which would be three Winchester bushels, by the English acre ;

Four Winchester bushels, by the Scotch acre ;

14 stone, of 14 lb. by the Irish acre.

153 *Average Produce upon the best Soil in No. X.*

Flax.—One hectolitre by the collier—

Which would be $2\frac{1}{4}$ th Winchester bushels, by the English acre ;

$3\frac{1}{2}$ th Winchester bushels, by the Scotch acre ;

$16\frac{1}{4}$ th pecks, by the Irish acre.

Clover.—Five pounds (decimales) by the collier—

Which would be five pounds avoirdupois, by the English acre ;

$3\frac{1}{2}$ d pounds avoirdupois, by the Scotch acre ;

Eight pounds avoirdupois, by the Irish acre.

Buck-wheat.—The same quantity and proportions by the English, Scotch, and Irish acre, as stated in the foregoing Section.

SECT. VI.

Average Produce in Division No. X. upon the best Soil.

THAT in the first quality of soil is as follows :

Potatoes.—30,000 lb. de Gand by the collier—

Which would be $11\frac{1}{2}$ th tons, by the English acre ;

$14\frac{1}{4}$ th tons, by the Scotch acre ;

$18\frac{1}{4}$ th tons, by the Irish acre.

Wheat.— $12\frac{1}{4}$ hectolitres per collier—

Which would be $32\frac{1}{4}$ th Winchester bushels, by the English acre ;

$10\frac{1}{2}$ th bolls, by the Scotch acre ;

$11\frac{1}{4}$ th barrels, by the Irish acre.

Flax-seed.—450 lb. de Gand by the collier—

Which would be $6\frac{1}{4}$ th Winchester bushels, by the English acre ;

8 $\frac{1}{2}$ th Winchester bushels, by the Scotch acre ;

10 $\frac{1}{2}$ th Winchester bushels, by the Irish acre.

Rye.—12 $\frac{1}{2}$ hectolitres by the collier—

Which would be 32 $\frac{1}{2}$ th Winchester bushels, by the English acre ;

40 $\frac{1}{2}$ d Winchester bushels, by the Scotch acre ;

10 $\frac{3}{4}$ th barrels, by the Irish acre.

Oats.—15 hectolitres by the collier—

Which would be 38 $\frac{1}{2}$ Winchester bushels, by the English acre ;

Seven and a half bolls, by the Scotch acre ;

12 $\frac{1}{2}$ th barrels, by the Irish acre.

Buck-wheat.—10 hectolitres by the collier—

Which would be 25 $\frac{1}{2}$ th Winchester bushels, by the English acre ;

32 $\frac{3}{4}$ th Winchester bushels, by the Scotch acre ;

41 $\frac{1}{2}$ th Winchester bushels, by the Irish acre.

SECT. VII.

Average Produce in that part of Division No. X. where the Sand prevails.

Rye.—12 hectolitres by the collier—

Which would be 30 $\frac{3}{4}$ th Winchester bushels, by the English acre ;

39 Winchester bushels, by the Scotch acre ;

10 barrels, by the Irish acre.

Oats.—18 hectolitres by the collier—

Which would be 46 $\frac{1}{4}$ th Winchester bushels, by the English acre ;

160 *Average Produce of Sandy Soil in No. X.*

58½th Winchester bushels, by the Scotch acre ;

15¼th barrels, by the Irish acre.

Flax-seed.—300 lb. de Gand by the collier—

Which would be 4½th Winchester bushels, by the English acre ;

5½th Winchester bushels, by the Scotch acre ;

7½th Winchester bushels, by the Irish acre.

Buck-wheat.—15 hectolitres by the collier—

Which would be 38½ Winchester bushels, by the English acre ;

49 Winchester bushels, by the Scotch acre ;

62½th Winchester bushels, by the Irish acre.

The variation as to seed and produce in the same district, where the soil is in some measure different, appears in the foregoing statement ; and it is chiefly remarkable, that, with nearly the same quantity of seed, equal culture, and without manure in either case, the produce of buck-wheat is considerably the greatest on the lightest and most sandy soil* : a great encouragement to the cultivation of this grain in sandy districts ; and if once established in our countries, its intrinsic value would shortly create a ready sale.

The average rent of the Division under notice, is fifteen florins by the arpent, about 1*l.* 2*s.* 6*d.*

* It also appears, that the return of oats is better upon this soil than on that of a superior quality ; but upon referring to pages 148 and 149, it will be found, that the sandy soil had the greatest quantity of manure.

by the English acre. The taxes about twelve francs the arpent, or 10s. by the English acre.

The average rate of purchase, five hundred florins by the arpent, about 37*l.* 10s. by the English acre.

The duration of leases, from six to nine years.

The price of a good work-horse, from 20*l.* to 25*l.* British; that of a milch cow, 9*l.* British; that of a sheep, 1*l.*

We now come to the celebrated Pays de Wæs; which shall be treated of in the next Chapter.

CHAP. XII.

SECT. I.

DIVISION N° XI.

Boundaries, Soil, general Produce, and Rotations.

THIS Division is bounded on the east by the Scheldt, which river also touches its most northern and most southern points ; and upon the west, the remotest part of the boundary reaches to Moerbeke.

Its chief places are St. Nicolas, Tamise, St. Gilles, and Beveren.

The soil, which is much blacker than that of other districts, consists of alluvial deposit, clay, loam, and sand ; in which, however, the latter seems very prevalent, insomuch, that except in the Polders, which bound this Division on the north, there is no compact soil to be observed, or any that is not of a tender and friable nature. There are, however, different qualities of soil within the district ; three-eighths of which are considered good, four-eighths middling, and the remaining eighth bad.

The chief produce of this Division consists of wheat, rye, oats, potatoes, flax, and clover.

Turnips and carrots are taken as second crops, and hemp occasionally introduced.

Some parts of this Division are of a more sandy quality than others; but none that will not yield wheat. However, in this lighter soil, buck-wheat is used as the terminating crop of the course, with great advantage. As wheat is grown in all cases, it is unnecessary to mark their system of succession by more than one general rotation, which is as follows :

1st, *Potatoes*—With 36 carts of mixed manure of all descriptions, per arpent; being 21 tons by the English acre*.

2d, *Wheat*—Without any manure†.

3d, *Rye and Clover*—With 10 carts of any species of manure, per arpent; being 5½ tons by the English acre.

4th, *Clover*—In many cases without manure, but generally with six carts of ashes; being about 3½ tons by the English acre.

5th, *Wheat, or Rye, with Turnips as a second Crop*—With six carts of short dung—the sweepings of streets considered the best; being 3½ tons by the English acre.

* The course is sometimes made to commence with rye, and carrots as a second crop; in which case the proportion of manure is but one half, or 18 carts.

† If rye be substituted with turnips, as a second crop, nine carts of manure are applied.

164 *Application of Manure in the Pays de Waes.*

6th, *Oats*—With eight carts of mixed manure, per arpent ; being $4\frac{1}{2}$ tons by the English acre.

7th, *Flax or Hemp*—With four carts, street manure, for flax, and 15 of mixed manures for hemp, per arpent ; being in the first case $2\frac{1}{2}$ tons, and in the latter $8\frac{1}{2}$ tons per English acre.

8th, *Wheat, with Turnip as a second Crop*—With four carts of mixed manures, per arpent ; being $2\frac{1}{2}$ tons per English acre.

The foregoing is the general course which is practised in this Division. Where rye is substituted instead of wheat, it is in consequence of a lighter and more sandy soil. In the strong soil of the Polders, rape-seed and horse-beans are introduced in lieu of other crops : but the succession is never suffered to exceed the eighth year, without being recommenced, and is in many cases limited to a seven-course rotation, which, on the inferior soils is as follows :

- 1st, Potatoes,
- 2d, Wheat, with carrots as a second crop,
- 3d, Flax and clover,
- 4th, Clover,
- 5th, Rye,
- 6th, Oats,
- 7th, Buck-wheat.

The last two crops without manure. Spurry is sometimes, but rarely, sown in this Division.

SECT. II.

Moderate Application of Manure in the Pays de Waes, Division No. XI.

It is remarkable in this Division, not only that three crops of wheat are in general obtained within eight years, but that the proportion of manure is considerably less than in most other districts.

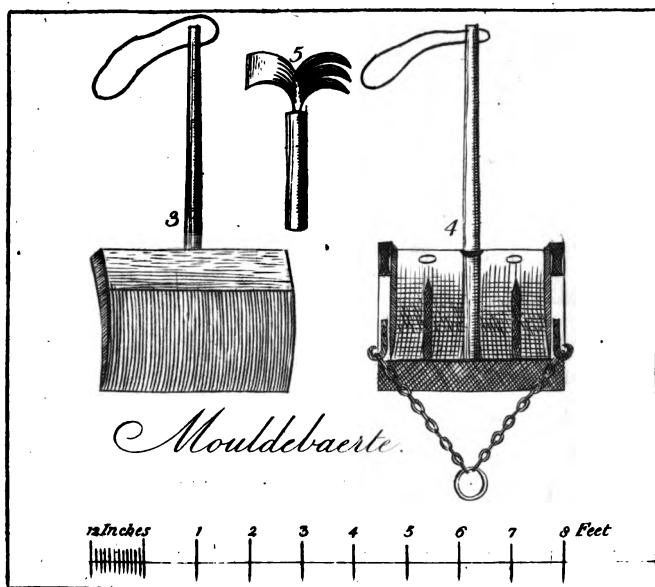
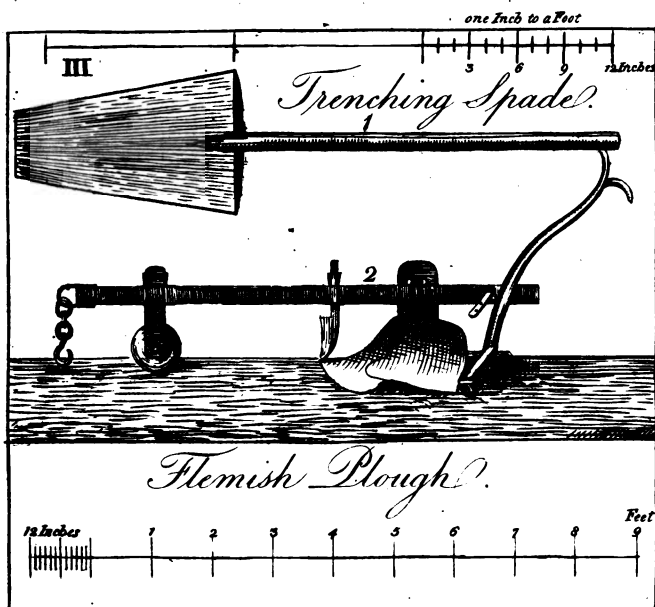
In Division No. III. and in those which resemble it, the quantum of manure per bonnier, for the first eight years of the rotation, is 520 carts; which would be, by the arpent of the Pays de Waes, nearly 165 carts; whereas the real number applied to the crops of the entire eight years' course in that Division, is but 74 carts, of 1500 lbs. of Ghent, each, which would be about 43 tons by the English acre. This appears to be a very moderate dressing indeed, for an acre in every eight years; and as the produce, when stated, will turn out very respectable, it becomes an obvious consideration, whether, in our practice, it might not be better to divide the quantum of manure amongst a certain number of crops, than consume it all upon one, to the deprivation of the rest, which is the usual method. It is very remarkable too, that the flax crop, which in other places is thought

to require the most abundant manure, in this district, receives the lowest proportion; nor is the labour of the plough in this at all commensurate with that of other districts, the two first crops of wheat in the course being sown with one ploughing, and the third with two; flax with but two ploughings; rye and oats with three ploughings each; but, for the commencing crop of the rotation (potatoes) a deep trenching is given by hand, which, as in Division No. X., lessens the number of ploughings, and to which in a great measure, may be attributed the reduced application of manure. As this practice is universal in this Division, it shall be treated of in the following Section.

SECT. III.

Preparation of the Ground by Trenching.

THIS remarkable practice is confined to the lighter soils, and is unused where the strong clay prevails. In the districts in which it is adopted, the depth of the operation varies with that of the soil; but till this shall have arrived at nearly two feet of mellow surface, a little is added to it at each trenching, by bringing to the top a certain proportion of the under stra-



tum, which, being exposed to the action of the atmosphere, and minutely mixed with a soil already fertilized, gradually augments the staple till the sought-for depth be acquired. In the Division now under our observation, there seems to be little necessity for any further deepening; but the repetition of the practice itself is as periodical as the recommencement of their rotation. It is performed with a spade, the iron of which is fifteen inches, and the handle two feet in length. The labourer standing in the last-formed trench, with his left hand at the bottom of the handle, and his right near the top, by the weight of his body, and without the assistance of the foot, sinks the spade about eighteen inches, and standing sideways, throws off the soil with a peculiar sleight and turn of the wrist, so as to lodge it in an oblique position in the trench, and against the preceding line of work, retiring as he casts it from the spade, and thereby effecting some little mixture of the two strata, though the upper surface is at the same time placed below the other.

The object of this practice is, not only to let a surface rest, that has been for seven or eight years employed in the production of various crops, but to bring another into action, which has not merely had the advantage of repose, but the enrichment of a considerable portion of ma-

nure, which in a porous soil cannot have failed to find its way to the lower stratum. To the universality of the habit in this Division for ages back, much of the fertility of the Pays de Waes is to be attributed. It is particularly observable, that in every district where trenching takes place, the quantum of manure is diminished, and the number of ploughings are less; so that eventually, it is not so expensive a process as at first view it may appear: nevertheless, a fair proportion of manure is considered essential the first season; for though the under stratum has not only had a long exemption from duty, as well as the annual acquisition of such parts of the manure as may have drained through the upper soil, yet does it possess a coldness, which requires a stimulant to bring it into action.

The soil which has once undergone this operation is easily worked, and the trenching seems to go forward expeditiously; indeed in any of the light and deep soils, the labour is not severe. In this Division it is performed by the piece, to the depth of sixteen inches (and so in proportion) for forty-two francs the arpent, about 32s. by the English acre. The cheapness of the execution is a great encouragement to the practice; but this turns upon the price of labour, (which in this district is 15*d.* a day) and chiefly, upon the facility of a loose and pulverized soil.

Some have sought to economize, by the use of two ploughs, the second working to a considerable depth; but the objection made to this by skilful farmers in the vicinity of St. Nicolas, was, that sufficient depth was not thereby attained, nor were the two strata by this operation sufficiently blended; for though by the spade they are made to change places, yet by the oblique manner in which the mould is placed in the trench, a certain degree of admixture of the upper and under soil is effected, which is considered of importance.

Should it be found expedient to adopt this method in some of the deep and loamy soils of our countries, or gradually in the lighter, and more sandy districts, the cost would become less in proportion to the acquirement of skill in the operation; and at all events, the saving of ploughing may fairly be taken into calculation. Where an overflowing population demands every exertion to afford industrious employment for the poor, this would seem a useful channel of occupation for them, as well as for their employers. The author of these remarks suggested this from Flanders to some friends in Ireland, who adopted the practice, and have been amply repaid.

SECT. IV.

Farming Circumstances of Division No. XI.

IN this Division, where the soil is not all of equal quality, an equal produce is not to be expected. The great wheat country is in the neighbourhood of Tamise, Ruplemont, Baasel, and Crebie, and there the produce is great, being a return of twelve sacks, from one half sack of seed, or twenty-four for one : this would be thirty-one one-third Winchester bushels by the English, and ten seven-eighth barrels by the Irish acre ; but as a very inferior return prevails in certain parts of the Division, the average shall be fairly given in its proper place.

The most striking feature to the eye of the Agriculturist, in the Pays de Waes, is the rounded form which is given to all the fields—originally wet and low, it was necessary to divide and prepare the land, so as to prevent the lodgement of water—and instead of doing it in the usual way, by rounded ridges, they effected it by rounded fields ; not of any great extent, but in general from half an acre to an acre, consisting of but one ridge, the centre of which may be about six feet above the level of the water-course, which is the boundary of each Division :

thus not only drying the surface, but increasing it ; and diminishing the waste of furrows, rendered by this method in most cases unnecessary ; an improvement that must soon repay the first cost ; and to be accomplished by the same means which Mr. Wieland used upon the farm reclaimed by him in Division No. VIII*.

SECT. V.

*Further Farming Circumstances of Division
No. XI.*

Culture of Potatoes—and their Introduction into Flanders.

THE next most remarkable appearance is that of the potatoe crop : viewed at the season of their full growth, the stalks, which are very strong, are more than three feet in height, and seem to have been produced on a level surface, without ridge, drill, or interval ; but on examination, it is found that much care has been bestowed upon the crop, which has not been left without sufficient spaces and hoeings. The method in general use in this district is as follows :

The ground having been trenched in the winter to the depth of nearly two feet, (which is per-

* Vide page 113.

formed at the rate of forty-five men to the English acre), is mostly ploughed and harrowed in the spring; and small square holes having been formed at about eighteen inches from each other, the set is deposited therein, the hole nearly filled with dung, and the earth thrown back over all; as the stalks rise they are earthed up from the intervals, and manured with liquid manure; and as they continue to rise, they receive a second earthing round each distinct plant, which, with a suitable weeding, terminates the labour. Notwithstanding the distance between the plants, the whole surface is closely covered by the luxuriance of the stems, and the return is abundant. If the seed be large, it is cut; if small, it is planted whole—in some parts of the Pays de Waes they drop the potato sets in the furrow as the plough works, and cross-hoe them into drills as they rise; but the method first mentioned, is the most usual, and the yield, in many cases, amounts to 120 hectolitres by the arpent, which is equal to $10\frac{1}{2}$ tons, by the English, and $16\frac{1}{4}$ tons, or 130 barrels of $2\frac{1}{2}$ cwt. each, by the Irish acre. That this mode of planting is preferred, appears from its being adopted by those who are obliged to rent small patches for the single crop. A person of this description mentioned, that he conceived the produce greatest in this way. Potatoes are the chief reliance of the lower classes

for their food. They are prized in Flanders, as being both wholesome and economical, and are considered there so essential to the subsistence of a dense population, that at one time it was in serious contemplation to erect a statue, or some other monument of the country's gratitude, to the person who first introduced amongst them so valuable a production.

The first introduction of potatoes into the Netherlands, was, as it is said, by a physician of the name of Charles de l'Ecluse, in the sixteenth century. Their utility and mode of culture were, however, little known, (and not at all in the district of Western Flanders), till the year 1620, when Father Robert Clarke, one of the Carthusian Friars, who were obliged at that time to leave England, brought from thence the first potatoes which appeared in Flanders, and which were planted in the neighbourhood of Nieuport. Their excellence as an article of diet, was not at first sufficiently appreciated, and the culture advanced but slowly: they had only reached the gardens of Bruges in the year 1704, when a landed proprietor, of the name of Verhulst, in order to multiply them in the country, distributed a considerable quantity gratis. This caused their rapid and extensive cultivation by the gardeners and farmers, who supplied the vegetable markets, and from that æra may be

dated their culture on a great scale. From this time they gradually became the food of the peasantry, and of their live stock.

Towards the middle of the century all the inhabitants of towns began to use them freely, and from the uniformly increasing price of grain, they are now established as a never-failing dish at every table, of both rich and poor. They are also very much used in feeding cattle and swine; but for this purpose a particular sort, much resembling our ox-noble, or cattle-potato, is made use of, and the produce is in Flanders, as with us, considerably greater than that of the other kinds intended for the table.

SECT. VI.

Further Farming Circumstances of Division No. XI.

In this Division carrots and turnips are never allowed the advantage of a fallow, but are uniformly taken as second crops; and the result is, what might naturally be expected, a very poor return. The weight of the best second crop of carrots is estimated at 15,000 lbs. of Ghent to the arpent, being but $5\frac{1}{4}$ tons to the English acre; and that of turnips at but 7000 lb. of Ghent, being $2\frac{1}{4}$ tons to the English acre.

Carrots are much used in this quarter as food for milch cows ; and the proportion given to produce the greatest quantity and best quality of butter, is two Winchester bushels, tops and all, to each cow in the twenty-four hours.

Clover is cut once in the same year that it is sown, a very unusual practice, attributed by some to a particular mode of preparing the seed ; but in all probability, resulting from a clean, rich, and finely pulverized soil, and from being sown either with rye or flax, the crops which are earliest harvested.

The clover crop is manured the season after it is sown, with ashes, in preference to any other dressing ; as the liquid manure, though very effectual in promoting the luxuriance of the growth, leaves after it a flavour on the plant, which is disgusting to the cattle. This manure is therefore applied to the rye-crop which precedes the clover, and which is pressed in with the feet, as being considered preferable to rolling.

The produce of straw is well worthy of observation : the average of this Division, and of No. X., and indeed of many others, being 3500 lbs. of Ghent by the arpent, which, at a farthing a pound (less than the present rate of Dublin market) would amount to about three guineas by the English, and five by the Irish acre.

The farms in this Division are but from ten to thirty acres, except in the Polders, where pasture-land prevails.

On the smaller farms, but one horse is kept, and all the labour done without calling in the aid of another, except the deep ploughing, in which case an adjoining farmer, similarly circumstanced, supplies the second, either for a return in horse-work, or for about 4s. a day for man and horse. Here, as in all other parts of Flanders, the horses are of a good description, and highly kept:—two at most are used in ploughing, and are so tractable, as to be guided by a single rein, and by the well-known voice of the ploughman.

SECT. VII.

Average of Seed in Division No. XI.

Potatoes.—Ten hectolitres by the arpent—

Being about 19 cwt. by the English acre ;

About 25 cwt. by the Scotch acre ;

About 30½ cwt. by the Irish acre.

Wheat.—Three-fourths of an hectolitre by the arpent—

Being nearly two Winchester bushels, by the English acre ;

Ten stone and three-fourths, by the Scotch acre ;

Nearly thirteen stone and a half, by the Irish acre.

Rye.—Five-eighths of an hectolitre by the arpent—
Being one and a half Winchester bushel, by the English
acre ;

Eight stone one third of 14 lb. each, by the Scotch acre ;
Ten stone one-fourth, by the Irish acre.

Clover.—Nine pounds of Ghent by the arpent—
Being about seven and three-fourths pounds avoirdupois,
by the English acre ;

About ten pounds avoirdupois, by the Scotch acre ;
About twelve and a half pounds, by the Irish acre.

Oats.—One hectolitre by the arpent—
Being two and a half Winchester bushels, by the English
acre ;

Nine stone of 14 lbs. each, by the Scotch acre ;
Eleven stone of 14 lbs. each, by the Irish acre.

Flax.—Seven-eighths of an hectolitre by the arpent—
Being two and one-fourth Winchester bushels, by the
English acre ;

About eleven and three-fourths pecks, by the Scotch
acre ;

About fourteen and one half pecks, by the Irish acre.

SECT. VIII.

Average of Produce in Division No. XI.

Potatoes.—112 hectolitres by the arpent—

Being about nine tons and a half, by the English acre ;
About twelve tons and a half, by the Scotch acre ;
About fifteen tons and a half, or 125 barrels of 2½ cwt.
each, by the Irish acre.

178 *Average of Produce in Division No. XI.*

Wheat.—Including all kinds of soil, eight hectolitres by the arpent—

Being twenty and a half Winchester bushels, by the English acre ;

Upwards of six bolls and a half, by the Scotch acre ;

About seven barrels, of 20 stone each, by the Irish acre.

Rye.—Ten hectolitres by the arpent—

Being twenty-five Winchester bushels and a half, by the English acre ;

Five bolls, by the Scotch acre ;

Eight and a quarter barrels, of 20 stone each, by the Irish acre.

Clover.—33,000 pounds of Ghent in the two cuttings of green forage, by the arpent—

Being twelve and three-fourths tons, by the English acre ;

Sixteen and one-fourth tons, by the Scotch acre ; and

Twenty and three-fourths, by the Irish acre.

Oats.—Sixteen hectolitres by the arpent—

Being nearly forty-one Winchester bushels, by the English acre ;

Upwards of eight bolls, by the Scotch acre ; and

Thirteen barrels and a half, by the Irish acre.

Flax.—Estimated at 270 francs by the arpent—

Being 10*l.* 2*s.* 8*d.* by the English acre ;

13*l.* 6*s.* by the Scotch acre ; and

16*l.* 8*s.* 4*d.* by the Irish acre.

The common average produce of flax throughout Flanders, is 240 kilogrammes of yarn by the *mesure*, and 2½ hectolitres of seed.

This would be by the English acre, 34½ stones, of 14 lb. each, of yarn ; 6½ Winchester bushels of seed.

Further Circumstances in Division No. XI. 179

By the Scotch acre, $45\frac{1}{2}$ stones of 14 lb. each, of yarn ;
 $8\frac{1}{2}$ Winchester bushels of seed.

By the Irish acre, 56 stones of 14 lb. each, of yarn ; 42
pecks of seed.

SECT. IX.

*Further Farming Circumstances in Division
No. XI.*

HEMP is sometimes sown in the Pays de Waes instead of flax, and the produce is estimated at nearly an equal value ; whilst the quantity of seed sown is, of flax, seven-eighths of an hecto-litre, and of hemp, but one-eighth ; but the preparation of the ground for this latter crop, is infinitely more laborious, the number of ploughings being double, and the quantity of manure nearly quadruple.

In this, as in other parts of the country, the harvest is secured for the most part in barns—any overplus is stacked upon the ground ; no corn-stands are used, and their only reliance against vermin is, what they consider effectual, a number of cats. In general, the stacks are built in a most slovenly manner, but in this Division, are finished with great neatness.

The extent of farms, as has been mentioned, is from ten to thirty acres.

The duration of leases, three, six, nine, and sometimes eighteen years. In many cases, the routine is so well understood, that no written agreement is executed*.

The rent of land is, for the first quality, forty francs the arpent; being 1*l.* 10*s.* by the English acre. Second quality, thirty-two francs the arpent, being 1*l.* 3*s.* 8*d.* by the English acre.—Third quality, twenty-four francs the arpent, being 17*s.* 9*d.* by the English acre.

The purchase of the first quality, twelve hundred francs by the arpent, being 45*l.* by the English acre.—Second quality, eight hundred francs by the arpent, being 30*l.* by the English acre.—Third quality, four hundred francs the arpent, being 15*l.* by the English acre.

This exhibits a great variation in point of value, and of course in quality of soil; and it must be recollected, that the average produce above stated, is the average of the three qualities.

Day-labour is five-pence with board, and fifteen-pence without it.—Taxes for the first quality of land, fourteen francs the arpent, 10*s.* 6*d.* by the English acre;—second quality, twelve francs, 8*s.* 10½*d.* by the English acre;—third quality, eight francs, 5*s.* 11*d.* by the English acre; average tax of the three qualities, by the English acre, 8*s.* 5*d.*

* For the clauses of a written lease, Vide Appendix.

Price of a good work-horse about 22*l.* ;—of a good milch cow, from three to four years old, 8*l.* ; of a sheep, 17*s.* ; and the price of wool, un-mixed with Merino, but 8*d.* a pound.

Thus terminate those observations upon the farming circumstances of the Pays de Waes, a district of merited celebrity, and obviously beautiful to the eye, in the garden-like appearance of its cultivation. Many other parts of Flanders are not inferior in skill and management, but, as districts, do not exhibit the same unity of system and operation.

The Pays de Waes forms the last Division upon the agricultural chart prefixed to this Report ; and was originally intended as the limit of the Reporter's inquiry ; but the Island of Cadsand (though beyond the boundary of Flanders), having been represented to him in an interesting point of view, attracted his attention ; and the result of his inspection shall be given in the next Chapter.

CHAP. XIII.

SECT. I.

Situation and Soil of the Island of Cadsand.

CADSAND is a part of Holland, insulated with respect to that country, but almost a peninsula with respect to Flanders, being only separated from it by an arm of the sea, terminating in a canal in the vicinity of Sluys. The whole of this island has been, from time to time, reclaimed from the sea by embankments. The soil is therefore alluvial, of a strong and tenacious substance, but of a remarkably rich quality ; so much so, as even at the present day to yield its course of crops with but one application of manure.

The culture and management being very nearly the same throughout, and the scale of farms being in general from 100 to 200 arpens, a medium farm of 150 arpens shall be detailed, as a fair specimen of the prevailing practice.

SECT. II.

*Arrangement and Management of a Farm in
Cadsand, of 150 Arpens : 166 English Acres.*

THE proportion of meadow and arable is as follows :

Meadow	20 arpens.
Under the plough	120 ditto.
In trenches and ditches with verges	10 ditto.

150

Of the 120 arpens under the plough, one-sixth, or 20 arpens, are annually given up to fallow ; the treatment of which proportion through its rotation, shall be circumstantially stated.

All is done here by the plough : from the extreme richness of the alluvial soil, trenching is considered unnecessary, and for this purpose the spade is never used.

These 20 arpens, from the 1st of May till September, receive five ploughings ; first, with a light plough to the depth of four or five inches ; they are then harrowed twice within six days from the ploughing, with an iron-pinned harrow ; and in the course of ten or twelve days, if the weather be dry, are ploughed again with the

Walloon, or heavy, plough (drawn by three horses) from nine to twelve inches deep. After this second ploughing they harrow the ground twice, as before, and plough it again three times, to the full depth, with suitable harrowings also, at the intervals of eight or ten days after each ploughing.

These several operations occupy about two months ; at the expiration of which time, about the beginning of July, they manure those twenty arpens with 500 cart-loads of mixed manure of horses, cows, and swine. These are heaped together, and turned at the beginning of spring, to mix them the more minutely ; because, as they alledge, the heat of the horse-dung beyond that of the cows, the permanency of the cow-dung beyond that of horses, and the richness of the dung of swine beyond that of either, when blended together, give to the land the proper degree of heat and of fertility, for the production of barley and rape.

In putting out this manure, great care is taken to spread it equally, and not in greater extent than can be ploughed in within the day, that the sun and air may not carry off the fertilizing particles of the manure.

Thus, upon each arpent are put 25 loads of 1600 lb, of Amsterdam, each, which is at the rate of $15\frac{1}{2}$ tons by the English acre.

SECT. III.

*Preparation for the respective Crops, in Cad-
sand, according to the different Courses.*

THE rotation is not always made to commence with the same crop.

If *rape* be the leading crop of the course, the fallow receives an additional ploughing previous to the manure. The seed is sown at the beginning of August, five pounds to the arpent ; if the sowing be delayed to the middle of the month, six pounds and a half, and if to the end of the month, nine pounds and a half are sown. This variation of the quantity of seed according to the time of sowing, not common in other countries, is particularly insisted on in this.

If *barley* be the crop chosen for the first of the course, it is thought necessary to give two additional ploughings after the manure is put in, taking care that by the last, the spaces shall be of a rounded form, sloping off from the raised centre, and terminating on each side with the trenches, which are uniformly at twenty yards distance from each other. The latter ploughing takes place about the middle of September ; and from the 3d to the 14th of October, the winter barley (*sucrion*) is sown, 80 lb. of Amsterdam to

the arpent, which is at the rate of 69 lb. avoirdupois to the English acre.

In the next year the rotation occasionally varies; sometimes the whole of the 20 arpens is given up to wheat; but most generally is parcelled out in crops of horse-beans, carrots, clover, and potatoes. In this case, after carrying off the barley*, two ploughings with a light plough are given, the last two inches deeper than the first, and two harrowings, with wooden pins. But in case of sowing wheat, an additional ploughing is given with the heavy plough, to the depth of nine inches, care being taken to round the spaces in the manner before described. The sowing of the wheat takes place from the 15th to the 30th of October, the quantum of seed seven-eighths of a sac, or 126 lb. of Amsterdam, by the arpent, which is at the rate of 1½th Winchester bushels by the English acre. The *best* grain is chosen, free from blight or damage, which is steeped for two days previous to sowing, in a solution of 60 lb. of lime and 30 lb. of salt, which is sufficient for 1400 lb. of seed.

This solution is considered a sure preventive

* Even before the crop is carried off, the ploughing commences, the stucks being formed in straight lines, and at equal intervals.

against smut and worms ; and without pretending to account for its efficacy, the farmers rely on it, as established by the experience of ages : they also make a point of changing their seed every year.

The crop which succeeds to wheat is that of horse-beans.

The wheat harvest being concluded between the middle and end of August, two ploughings are given with the light plough, the last two inches deeper than the first ; two harrowings also ; a third ploughing is given in the month of October with the heavy plough, still deeper by at least two inches ; about ten inches altogether. The land remains thus till February, or even till March, if the weather does not suit, at which time it is sown with beans. The sowing is done by women, who, at the wages of 9*d.* a day, drop the seed into the furrow formed by the light plough, which is closed by the next turn of the same implement.

When the frost has been severe, so as to pulverize the ground extremely, the beans are often sown in rows formed by the hoe, across the sets, and at twelve inch intervals, the land having been previously well harrowed.

This method is much approved, and costs by task-work about 3*s.* 6*d.* by the English acre. It has also the advantage of requiring less seed,

230 lbs. being sufficient in this way, and 270 lbs. being necessary in the other, as by the English acre.

After the bean harvest, which takes place in the month of September, the land is sown with wheat, which is a second crop of this grain since the commencing fallow ; and this fourth crop of the course is often very great, wheat being found to succeed remarkably well after beans. Indeed this is a fact admitted in most countries, and yet in Ireland, the bean crop is, comparatively speaking, unknown, or at least unpractised.

As the bean harvest in Cadsand is late, and approaches the rainy season, the land where they grew, can only receive two ploughings, the first with the light, the second with the heavy plough, so as to let the wheat be sown between the 15th and 30th of October.

If the leguminous crops have occupied the *third* year of the succession, all terminates here with the wheat crop ; but if not, they are now brought forward in the following proportions :

Clover,	6 arpens.
Carrots,	3 ditto.
Potatoes,	1 ditto.
Horse beans,	10 ditto.

20

which finishes the course.

SECT. IV.

*Disposition of Crops upon a Farm in Cadsand,
of 150 Arpens, or 166 English Acres.*

FROM the detail in the foregoing Section, it appears that the usual succession with respect to one-sixth of the arable land, or twenty arpens, is as follows :—

1st year,	Fallow,
2d,	Barley or rape,
3d,	Wheat,
4th,	Beans,
5th,	Wheat,
6th,	Clover, carrots, potatoes, and beans.

Therefore, upon the entire farm of 150 arpens, there are every year, of

Fallow,	20 arpens,	} being 120 arpens of tillage.
Barley and rape,	20 ditto,	
Wheat,	40 ditto,	
Beans,	30 ditto,	
Clover, carrots, and potatoes,	10 ditto,	
Meadow,	20 ditto,	
Fossées, trenches, &c.	10 ditto,	
<hr/>		
150		
<hr/>		

So great is the richness of this alluvial soil, that all the foregoing crops are *in general* produced, without manure, except that which has

190 *Disposition of Crops upon a Farm in Cadsand.*

been applied to the fallow in the first year of the course. There are, however, some exceptions.—It happens, sometimes, but rarely, that lands of less richness, have been manured after beans, for the succeeding crop of wheat, with half the quantity of manure usually given; and for clover it has been found of great use to dress it lightly with ashes. This is generally done in January, when the frost is hard.

The soil intended for carrots is also sometimes manured in autumn, after two ploughings, and in November the manure is ploughed in, as deep as possible, with three horses. With this preparation there have been instances of carrots of ten pounds weight each; and where they are set out at the distance of eighteen inches from each other, the produce is very great; an arpent thus prepared will yield 60,000 pounds weight of Amsterdam, about twenty-three tons by the English acre. These are the only instances of manure being applied otherwise than on the first fallow, and they very seldom occur.

SECT. V.

The Number and Cost of Farm-Servants and Labourers upon a Farm in Cadsand, of 150 Arpens, or 166 English Acres.

Four men, lodged and boarded at the farmer's cost, from the middle of February to the middle of November.—Wages, 8*l.* British each, for the nine months.

Two servant maids, lodged and boarded—wages by the year, 8*l.*

Two men for the three winter months, lodged and boarded—wages for that space of time, 2*l.* each.

Four men for the farm-yard, who are not lodged or boarded, but who at weeding, digging, reaping, mowing, and threshing, have work the year round—wages 21*l.* each, with the advantages of being supplied by the farmer with wheat, barley, and butter, at the lowest price, and of having the use of his carts and horses occasionally without charge; and as a perquisite, the tyings of all the sheaves, when threshed, which constitute the chief part of their firing.

In addition to these men, in the months of April, May, and June, *fifteen extra hands* are necessary for weeding, which is done at ten-pence per day wages.

Twenty additional reapers also are employed to cut the barley, and two mowers, who upon the farm under consideration, collect upon the borders of the *fossées*, &c. (comprising the 10 arpens of waste first mentioned), about ten tons of hay for the winter forage of the farmer's cows.

Thirty or forty hands are also necessary for cutting the wheat and beans; and this is usually done by the workmen, who come in from the neighbouring part of Flanders at task-work—six shillings by the English acre for barley, seven and sixpence for wheat and beans: a good workman at the Hainault scythe will earn five shillings a-day, cutting with great ease two-thirds or three-fourths of an English acre in the working hours. The dispatch of this mode of reaping is considered of primary importance.

In a favourable season, the entire wheat crop of the island may be seen growing, and harvested, within the same fortnight: nor is there a much greater extension of time required to put the whole surface which it occupied under the plough; with such promptitude is that operation entered upon, almost at the moment the reaping ceases, the farmers making it a point to have their implements, irons, and harness, in order at all times.

The diet of the labourer is coarse bread, butter, potatoes, and sometimes pork; but he is

wholly dependant on his earnings for the supply of himself and family, who, if they happen to be numerous, experience in winter much distress, as the soil is unsuited to flax, which might give them occupation, and no manufacture has been introduced into that part of the country.

SECT. VI.

The Number and Kinds of Live Stock kept on a Farm in Cadsand, of 150 Arpens, or 166 English Acres; and the manner of keeping them.

<i>Horses,</i>	11 for draft,	
	1 three year old,	
	1 two year old,	
	1 one year old,	
	1 foal,	
	.....	15
<i>Horned Cattle, ..</i>	10 milch cows,	
	2 two year old in calf,	
	2 one year old heifers,	
	2 calves,	
	.....	16
		<hr/>
		31
		<hr/>

It is said, that in many cases, eighteen horses and twenty head of horned cattle are kept upon a similar extent; but having undertaken to detail

the circumstances of a particular farm, this statement is confined to that alone, which, however, is a fair specimen of the management that prevails throughout the island.

The keep of the work-horse in winter, from the middle of November to the middle of February, for the 24 hours, consists of three pounds of beans, thirty pounds of bean-straw, and twenty pounds of wheaten or barley-straw, cut; or in lieu of these twenty pounds, a similar quantity of clover hay, cut; but this latter is only an occasional, and by no means a necessary indulgence.

The straw-cutter is precisely the same as that in common use with us, comprising a trough for the sheaf, and a single blade and pedal, worked by the hand and foot.

Some give less straw than the foregoing proportions; but as bean and barley-straw are considered to be well disposed of in dung, they give them in abundance, and are always satisfied, if about 1000 sheaves remain at May, to furnish fuel to the extra workmen taken in, who have a house specially given up to themselves for the time being, upon the farm.

From the middle of February to the middle of May, each horse has eight pounds of beans, twenty pounds of bean-straw, twenty pounds of barley-straw, cut, and the chaff of the wheat.

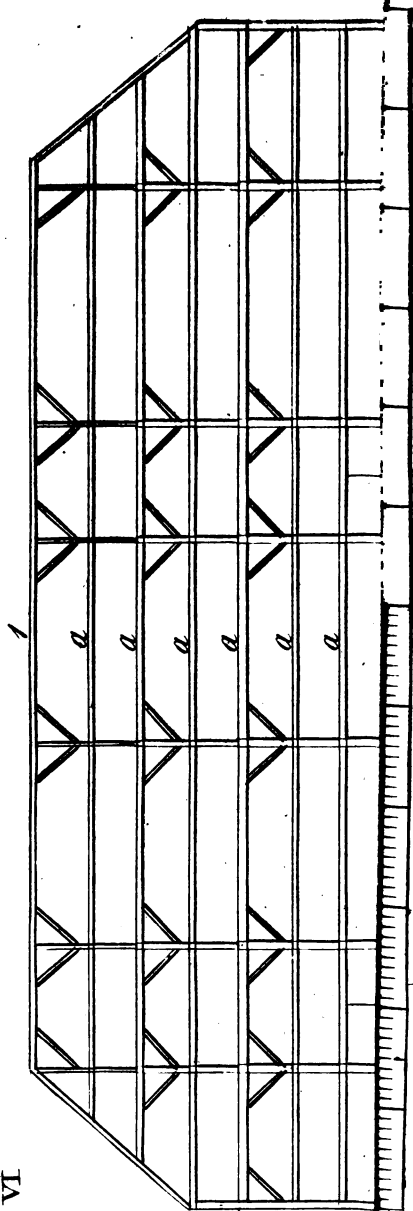
During the summer, about half an English acre of meadow, cut and carried to the stable, is counted sufficient for one horse; and from the middle of May to the middle of June, when in its full sap, it is unassisted by any other kind of food; but from the middle of June to the middle of September, about one-sixth part of an English acre of clover, (with two pounds of beans a-day), is added; and from the middle of September to the middle of November, each horse has about one-sixth of an English acre of carrots, the tops of which are given to the cows.

The treatment of the horses of Cadsand has been thus minutely stated, because they are in general in the highest condition, and are of a remarkably fine kind; nor can it be a matter of inconsiderable interest to our farmers, to perceive that all this is to be effected without hay or oats, which must lead them to reflect, that if a similar usage were adopted generally with us, a vast number of acres might be annually added to those of pasture or tillage, and a vast quantity of provision be rescued from the consumption of horses, and applied to the wholesome subsistence of man.

The manner of feeding the cows is this: During the six summer months, about an English acre of meadow is cut and carried for each cow. From the middle of November to the

middle of May, 20 lb. of hay, and 20 lb. of straw, are given to each. In other respects, they are not very particular as to their management, farther than to keep them comfortably housed and well bedded, the manure being a chief object, for the production of which every advantage is taken, as, upon a farm of this extent, besides the quantity of straw necessary to repair the roof of the farm-house, &c. (which is done at the farmer's cost), a considerable drawback takes place upon the quantum of manure, by his being obliged to furnish for the repairs of the embankments, four thousand sheaves or bundles, each weighing from six to eight pounds. This constitutes a heavy tax, amounting to nearly 30% at the common rate by which straw is valued in the country; but the public good, and individual security, are vitally concerned in the preservation of the banks, which accordingly, under a code of appropriate laws, experience the most minute attention.

VI



SECT. VII.

*Farm-Buildings upon a Farm in Cadsand, of
150 Arpens, or 166 English Acres.*

THE buildings upon this farm, are,

1st, *The Farm-house*—with an arched cellar, which admitting air above the level of the ground, is used as the dairy: this room, being about twenty feet long by ten wide, is sufficient for all the operations that appertain to the produce of ten cows, except the churning. The business of the dairy, of feeding veals, or rearing calves, is not attended to here with as much accuracy as in other parts of Holland; those matters (beyond what is necessary for the consumption of the house), are looked upon as secondary objects, the augmentation of manure being their primary consideration.

2d, *An Apartment for Churning*—with a partition which separates it from the machinery by which the churn is worked. In that which came under observation upon the farm which is the subject of these remarks, the wheel is worked by a single horse; but in many instances, the machinery is adapted to the power of two dogs, which is considered the best method; as, exclusive of the circumstance of a horse being otherwise more profitably employed, the compa-

rative cost of the machinery is in favour of using the dogs, as three to one ; the necessary apparatus for the latter amounting to no more than about 8*l.* British, whereas for the former it is seldom executed at less than 25*l.*

One cannot omit remarking the extreme cleanliness of the horse-walk, which is under the roof, but being neatly paved, accurately swept, frequently white-washed, and well ventilated, may be said to vie with the dairy itself, in cleanliness and sweetness.

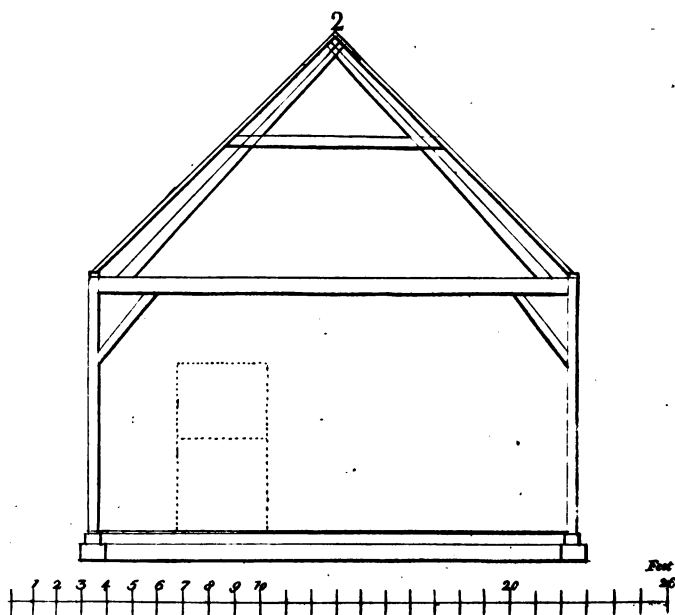
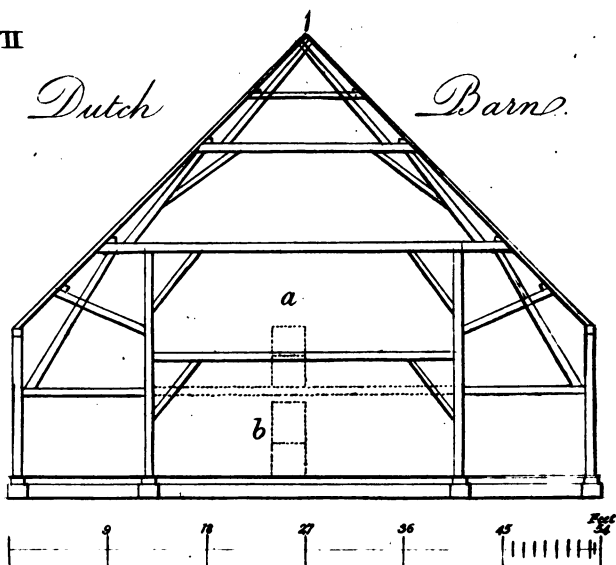
3d, *A Maisonette*—or small building for the use of extra-labourers, consisting of but one apartment, of 20 feet by 12, with a fire-place for cooking.

4th, *The Grange, or Great Barn*—which is 180 feet long by 55 feet wide. The ground floor, besides accommodating by its divisions all the horses and cows of the farm in comfortable stables, and furnishing two threshing floors for the flail, is sufficient also for a considerable depôt of corn in the sheaf, in two extensive compartments to the height of twelve feet, at which elevation, an open floor of joists, supported by wooden pillars (as the annexed engraving points out) is extended over the entire area of the barn, and is repeated at every five feet in height, to the top. Each floor is braced from the pillars, and not only forms a connexion of strength throughout the whole, but separates at the same time, without

VII

Dutch

Barn.



much loss of space, the different layers of corn, securing them from damage, by taking off the pressure of the great mass.

This barn is capable of containing about eighty arpens of corn* ; which is put in, in a summary way, within ten days from the reaping, and without waste. The beans are usually stacked at the outside, and thatched with reeds.

For protection against vermin, their whole reliance is upon cats, and they declare them to be effectual.

5th, *A House for Farming Implements*—forty feet by thirty, with a floor at the height of nine feet, forming a spacious granary for the reception of the threshed corn. This building is placed between the farm-house and the barn ; its front having five gates, or open arches, for the admission of the carts and other implements. Upon this farm, they consisted of carts, tumbrils, ploughs, harrows, roller, sledge, straw-cutter, and winnowing machine.

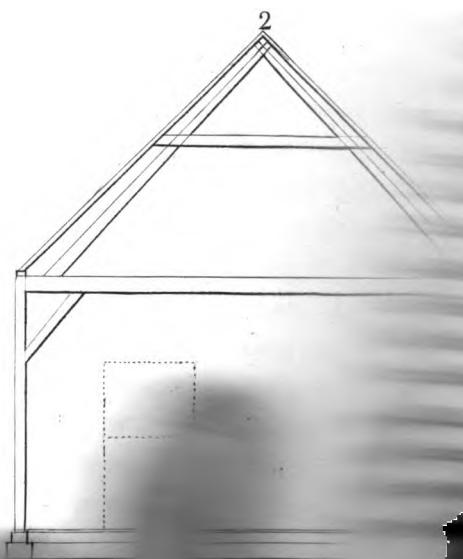
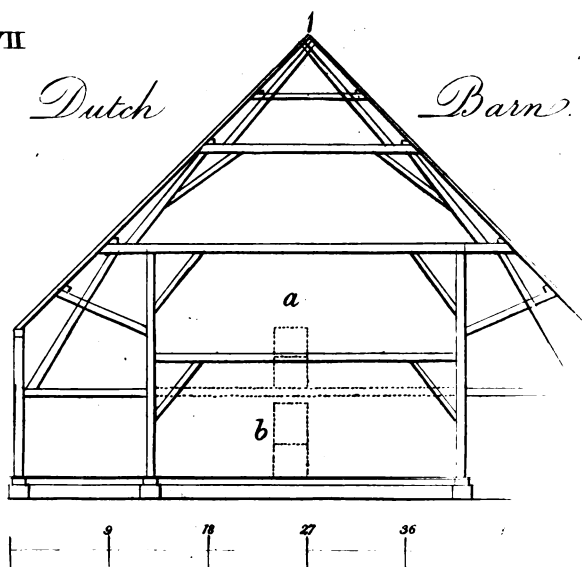
At the rear of this building is a piggery, supplied with stone-troughs, &c. and between the rear and the barn, is the seat of the dunghill, prepared at the sides and bottom with a cement impervious to moisture: on the collection and preservation of manure, the greatest attention is bestowed.

* Eighty-eight and a half English acres.

VII

Dutch

Barn.



Am, by the arpent—
ter bushels, by the English acre ;
els, by the Scotch acre ;
one, by the Irish acre.

of Amsterdam, by the arpent—
ter bushels, by the English acre ;
els, by the Scotch acre ;
one, by the Irish acre.

Amsterdam, by the arpent—
ter bushels, by the English acre ;
the Scotch acre ;
14 stone, by the Irish acre.

ry little cultivated in Cadsand ;
ss. The produce of straw is very
at an average of the different kinds,
Amsterdam by the arpent, being
voirdupois by the English acre. This
high average, but the length of straw
ry great, and the foregoing produce is
from the most accurate and respectable
ty in the island.

s particular farm has been thus minutely
ed, as it appeared to be well managed,
in its routine, presented all the agricultural
res of the surrounding country.

The nature of the soil, and the lowness of its
l, demand all the skill of the husbandman,
et off the surface-water, so as to preserve the
l in a state to admit of the frequent and ne-
sary ploughings. When any considerable

The construction and annual repair of all those buildings, are at the cost of the proprietor, except the straw necessary to keep the roof in order; and in some cases the repair of the barn-floors is done by the farmer.

The first cost of the buildings upon this farm, is valued at about 1000*l.* British, and the annual repair at 20*l.*

SECT. VIII.

Average Produce of different Crops in Cadsand; with other Circumstances.

Potatoes—24,000 lb. of Amsterdam, by the arpent—

Being $9\frac{1}{7}$ th tons, by the English acre;

$11\frac{1}{4}$ th tons, by the Scotch acre;

$14\frac{2}{5}$ tons, or $119\frac{1}{5}$ th barrels of $2\frac{1}{2}$ cwt., by the Irish acre.

Winter Barley—3580 lb. of Amsterdam, by the arpent—

Being $44\frac{1}{4}$ th Winchester bushels, by the English acre;

$12\frac{1}{4}$ th bolls, by the Scotch acre;

$22\frac{1}{4}$ th barrels, of 16 stone each, by the Irish acre.

Wheat—2100 lb. of Amsterdam, by the arpent—

Being 30 Winchester bushels, by the English acre;

$9\frac{1}{2}$ bolls, by the Scotch acre;

$10\frac{1}{2}$ barrels, of 20 stone, by the Irish acre.

Rape-Seed—2600 lb. of Amsterdam, by the arpent—

Being 40 Winchester bushels, by the English acre;

$50\frac{1}{4}$ th Winchester bushels, by the Scotch acre;

$16\frac{1}{5}$ th barrels, of 16 stone, by the Irish acre.

Rye—2520 lb. of Amsterdam, by the arpent—
Being $38\frac{1}{4}$ th Winchester bushels, by the English acre ;
 $49\frac{1}{4}$ th Winchester bushels, by the Scotch acre ;
 $12\frac{1}{4}$ th barrels, of 20 stone, by the Irish acre.

Horse Beans—2560 lb. of Amsterdam, by the arpent—
Being $39\frac{1}{4}$ th Winchester bushels, by the English acre ;
50 Winchester bushels, by the Scotch acre ;
16 barrels, of 16 stone, by the Irish acre.

Oats—2700 lb. of Amsterdam, by the arpent—
Being 58 Winchester bushels, by the English acre ;
 $11\frac{1}{4}$ th bolls, by the Scotch acre ;
 $19\frac{1}{4}$ th barrels, of 14 stone, by the Irish acre.

Oats are very little cultivated in Cadsand ;
turnips still less. The produce of straw is very
great, being, at an average of the different kinds,
8400 lb. of Amsterdam by the arpent, being
7234 lb. avoirdupois by the English acre. This
appears a high average, but the length of straw
here is very great, and the foregoing produce is
stated from the most accurate and respectable
authority in the island.

This particular farm has been thus minutely
detailed, as it appeared to be well managed,
and in its routine, presented all the agricultural
features of the surrounding country.

The nature of the soil, and the lowness of its
level, demand all the skill of the husbandman,
to let off the surface-water, so as to preserve the
land in a state to admit of the frequent and ne-
cessary ploughings. When any considerable

quantity of rain has fallen, the roads, which are *chemins de terre*, unpaved and ungravelled, are knee-deep. Many of the cross-roads lead along the banks of the ancient Polders, and are nearly impassable in bad weather. Upon descending from one of those banks, to enter the farm here spoken of, a tremendous slough occurred, even at its gateway, which afforded no very favourable anticipation of the cleanliness or good order of the interior; and yet, upon passing through a second gate, a farm-house, court-yard, and little pleasure-ground, presented themselves, in the most attractive garb of cleanliness and regularity.

The footway which surrounds the house, and communicates with the offices, was paved with tiles upon the edge, and mopped like a dairy-floor; the inside of the house was, in all its parts, a specimen of neatness. The furniture polished by good care; the irons bright; and the pewter, of which there was no mean display, appearing like a service of plate; nor was this visit expected, nor this extreme exactness any thing beyond the common usage of the country.

If cleanliness and order be comfortable, healthful, and respectable, this farm-house furnishes a model worth imitating.

SECT. IX.

General Circumstances respecting Cadsand, as affecting Proprietor and Occupier ;—with respect to Capital, right in Trees and Hedges, Menage, &c.

IN general, the cultivators in this island are also proprietors of the land, in farms, as has been stated, from 100 to 200 arpens.—When a letting takes place, the lease is for seven years ; and here a very material change from the Flemish regulation is established. The farmer coming in at May, can only count upon the crops of the ensuing year, as the farmer going out is entitled to the whole of those which he has sown. As the rent is paid yearly, instead of half-yearly, as in Ireland, there is no allowance made of fourth sheaf, or in any other way.

The sum necessary for the new farmer to expend upon a holding of the middle size, from May to the November twelvemonth, when he begins to dispose of his crops, is computed at about 750*l.* British.

The taxes are, according to the quality of the land, from 10 to 12, and 14 florins, an arpent ; which, with repairs of the farm-house and offices, and the expence of the interior drains and sluices, amounting to six florins more by

the arpent, are all chargeable to the proprietor. The average of this would be 1*l.* 6*s.* 8*d.* by the English acre.

In *some* instances, the taxes are said to equal what might be considered a reasonable yearly value for the land. They are advanced by the farmer, and the amount stopped by him out of his rent, which circumstance, though there may be a stipulation for half-yearly payments, causes the account to lie open to the end of the year; and this is, in all probability, the origin of yearly payments.

The purchase of land is calculated so as to leave the purchaser four per cent. clear, with the advantage of planting the grass-land and banks, which, if done with elm (the tree in general use for this purpose), and preserved with care, frequently turns to great profit.

The farmer has the advantage of the loppings of the ozier and willow, of which kind there are, upon some farms, from three to eight hundred trees. The underwood and branches of these trees are cut every four years, for fuel, for railing, and as cuttings to propagate a new succession. In many cases also, the farmer has the branches of the hard timber at his disposal for sale, provided the pruning be properly executed, and at his own cost.

The occupying farmer can only take the

growth of four years ; so that the usual term of leases being seven years, the tenant coming in is certain of an equal advantage.

There is sometimes a liberty given to the farmer, to cut down each year, from thirty to forty trees of the sallow kind, if they are beginning to decay, on condition of others being planted in their room.

For some years past, instead of paling in the grass-lands, white-thorn hedges have been adopted. They thrive remarkably, and are in great esteem, both as fence and shelter. They plant them so carefully, and keep them so free from weeds, that in five years they are in high perfection. This is done at the cost of the farmer, but in the end redounds to his profit, as the new tenant must take them at a fair valuation, by the verge or perch. The certainty of a similar remuneration, might incite the Irish farmer not only to make good fences, but to protect them.

The dietary of the Cadsand farmer is this : for breakfast, tea or coffee, with wheaten bread and butter, and often some cold pork ; for dinner, wheaten bread, occasionally a little fresh meat, some bacon, potatoes and vegetables ; for supper, invariably, a soup or *bouillée* made of butter-milk and bread.

A peculiar cleanliness prevails about all their

habitations; and the decencies of the table, (even for the labourers, who sit down to a regular table-cloth, furnished moderately with knives, but abundantly with forks and spoons) are uniformly observed.

It is hoped that this detail of the agriculture of Cadsand, may not be considered uninteresting. It surpasses Flanders in richness, and bears greater affinity to some of the deep soils of Great Britain and Ireland, from which there is little doubt that a similar produce might be procured.

CHAP. XIV.

SECT. I.

Live Stock of Flanders.

UNDER this head may be included horned cattle, sheep, swine, and horses.

The cattle are short-horned, of a pure and unmixed blood, and of the kind which we recognize under the title of the Dutch breed. They are, however, upon a smaller scale than in many parts of Holland, and not in general so well formed; very little attention being paid to the niceties of breeding, or the advantages of selection. The colour is for the most part black, or black and white; some are red, and some red and white; with fine bone, light neck and head, and thin chine; they are, nevertheless, in general, coarse at the point of the shoulder, flat in the rib, and sloping in the quarters. They are mostly pretty wide and level across the loins; are of a good quality of flesh, and are fair milkers. In this particular, however, they are nothing remarkable, the average quantity, except in the grass districts, where it is infinitely greater, being computed at about seven quarts each cow in the twenty-four hours, through summer and

winter, yielding one pound of butter from about eleven quarts.

The oxen are, as is the case in all breeds, larger than the cows, weighing, when fat, from five to eight cwt. When well fattened, they are excellent beef; but they are brought to market in general at two years old, and in a very unfinished state. Even at a more advanced age, and better kept, the flesh is laid on unequally, the hind-quarters being remarkably thick fine beef, whilst the fore-quarters throughout are of a quality considerably inferior, particularly coarse in the shoulder, and thin upon the rib and plate.

This is the result of inattention to improve the breed, which, with care, might be effected, as there are instances of individuals of good form; and if not absolutely perfect, yet possessing qualities which might correct defects by judicious selection.

But the great bar to improvement is the total neglect of procuring good bulls; the only qualification looked to is, that of being prolific. In some instances, a bull is put to upwards of two hundred cows; in general, to one hundred and fifty. In a commune of 380 hectares, between 900 and 1000 English acres, but one bull is kept; and the farmer who takes the trouble to keep him, is entitled to send his flock of one hundred sheep, marshalled by the shepherd and

his sagacious dog, over all the stubbles of the Commune to pasture, previous to their being ploughed up. This is the remuneration for the service of his bull.

This system must destroy any effort at selection, and thus the breed continues unimproved. There are, however, good materials as a groundwork, and the horned cattle of Flanders are altogether of a description that might, by proper management, be brought to great perfection.


SECT. II.*Sheep and Swine of Flanders.*

THE sheep are likewise a pure breed of the most perfect uniformity: long-woolled, but not sufficiently so; pretty clear in the bone, and very straight in the back, but very narrow, deficient in the girth and fore-quarters, long-legged, and, whether from the kind, or from the keep, the worst species of mutton. They are a sort that appears to require three or four years to make properly fat, and yet they are butchered at one year old, very nearly carrion. They are a lofty and lengthy sheep, and even at that age, and in poverty, are from fifteen to seventeen pound a quarter.

The manner of feeding is inimical to the putting up of flesh—they are housed at night, and in the day-time follow the shepherd, and are attended by his dog, through pathways, and along the verges of the fields and roads, picking up a mere subsistence, and never enjoying the range of a sweet and wholesome pasture. In winter they are let out but once a day, for a short time, and are fed upon rye in the sheaf, and hay. Some give them bruised beans and rye-straw. One would suppose this regimen should promote their fattening, but the market is, nevertheless, at all seasons, destitute of good mutton.

In this case also, as in that of the horned cattle, much might be done by careful breeding, and attentive selection.

The cross of the Merino has effected much, both in the improvement of the wool, and mutton, as far as it has been tried; it has, however, spread but a little way. A strict law, it is said, exists against the importation of English rams; except for this, a ready mode of improvement would be within reach; the fatting quality, wide loin, and heavy fore-quarter of the Leicester sheep, communicated by tups of that description, would make the Flemish flock highly valuable. The numbers, however, are very limited, and the desultory manner of their summer-keep,

added to the low price of wool, occasions a want of interest in the sheep stock of Flanders, which makes it but a very secondary object of attention or improvement.

The swine are also of a deteriorated kind—white, long-legged, narrow-backed, and flat-ribbed; not easily fattened, but when well fed and long kept, making excellent pork and bacon. This is the dearest meat in the market, and the farmer gets a high price for his hogs, which, however, does not sufficiently repay his cost in feeding; both quantity and quality of their provision being expensive. Exclusive of good keep for a year and a half, or more, a hog, for the last three or four months, is computed to consume nearly one ton of potatoes boiled, and about half a ton of the flour of rye, oats, buck-wheat, and beans—the buck-wheat is considered the best feeding.

A more fattening sort of swine would be a great acquisition to Flanders; and this might also be supplied from England (if no particular objection existed), to the introduction of early maturity amongst their present defective breed, and of course to the saving of much valuable provender.

SECT. III.

The Flemish Horse.

FLANDERS has long been noted for its breed of work-horses, and that of England has been considerably improved by the frequent importation from thence, of stallions and mares, previous to the French revolution.

To the eye of an accurate observer, it would appear that the Suffolk punch horse, deservedly approved, is of the species most prevalent in Flanders; so marked is the resemblance not only in colour, but in some of the essential points of form. However, though the prevailing colour is chesnut in all its shades, yet other colours are likewise to be met with; and, with very few exceptions, the Flemish horses are of superior strength, and of the true working character. The chief, indeed almost the only, defects to be observed in any, are, a want of depth in the girth, and a dip behind the withers; for symmetry, perhaps the shoulder also, at the top, should be a little finer; but in all other respects they possess the best shapes: a small head and pricked ear, a rising neck and crest; a short back; very short couples; great strength over the loins; round hips, and lengthy quarters; an open

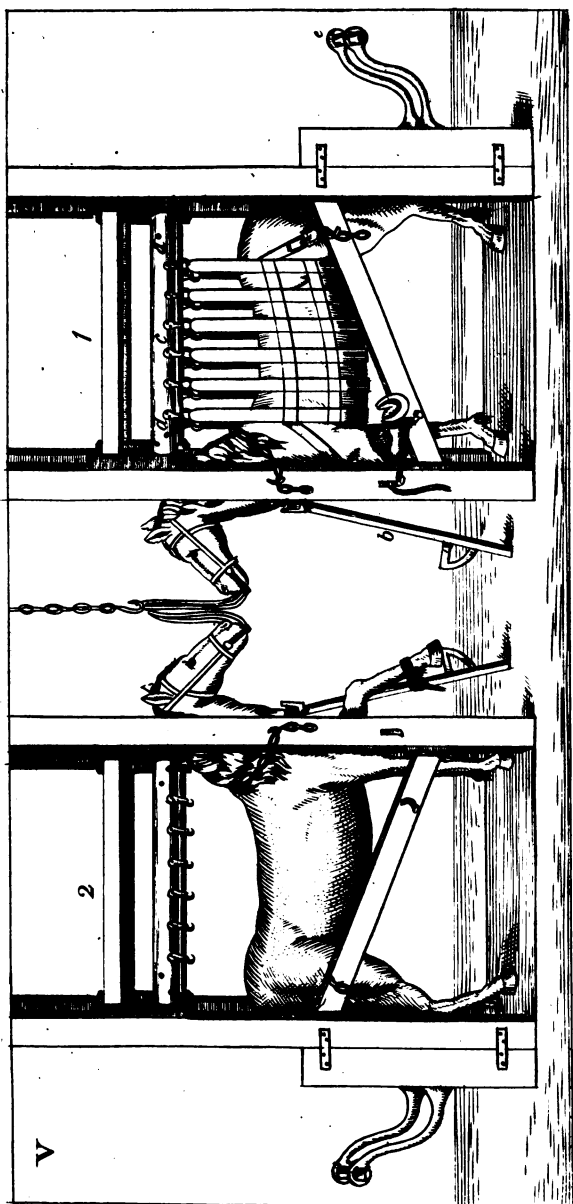
chest, yet light at the point of the shoulder ; a good arm ; short legs of powerful sinew, and unencumbered by flesh ; short pasterns, and a semi-circular hoof, with sound frog and open heel. These points comprised in a compact form, from fourteen and a half to fifteen and a half hands in height, constitute a work-horse of great merit, to be purchased at three years old from 20*l.* to 30*l.* sterling ; a proof that horses of this description are not uncommon in the country.

In some individuals, the defects above mentioned are not to be observed, and such are very perfect indeed.

It would seem that well-selected mares of this kind must prove a valuable introduction to a stud of the Suffolk breed, as the prominent defects of both might thereby be remedied, whilst the colour and character would be effectually preserved. On both sides a careful selection would be necessary, to acquire depth of girth ; but the fine shoulder and straight back of the Suffolk, would remedy those points of failure in the Flanders breed, whilst the long head and short neck, and, in some instances, too lofty and too lengthy a frame, would give way to the small head and beautiful neck, and to that compactness of form, for which that country is remarkable. In suggesting the introduction of well-chosen mares in preference to stallions, it is, because at

present, the former seem to be the most perfect in point of symmetry.

Since the last change of government in Flanders, some degeneracy has taken place. Under the French, a special attention had been paid to furnish those provinces with the best sizes of the working kind, at the charge of the government; and exhibitions were annually held, and prizes given for the best mares thus bred, and produced in competition. Many of those prize mares and their progeny are still in the country. One of them, and her dam, constitute the whole working force of a farmer upon fifty English acres, near Bruges: they do not exceed fifteen hands, and are competent to every employment within that extent, to which a farm-horse is applicable. Every farmer upon a similar quantity of ground, or even less, breeds his own work-horses, and disposes of the redundancy. Even the total absence of pasture is not suffered to prevent it; and the foals are found to thrive remarkably well in close house. For this purpose, as well as for the general keep of the stock, a regular dietary is observed. The manger is formed of well-cemented brick-work, and, (according to the season), in summer, clover, and in winter, carrots, are usually given; hay in very small quantities (in many cases not any), but in all cases, chopped straw



12 Inches
 1 2 3 4 5 6 7 Feet
 Flemish Forge.

mixed with corn or beans, or both, and water aired by lying in the stable, and whitened with a pretty strong proportion of barley-meal.

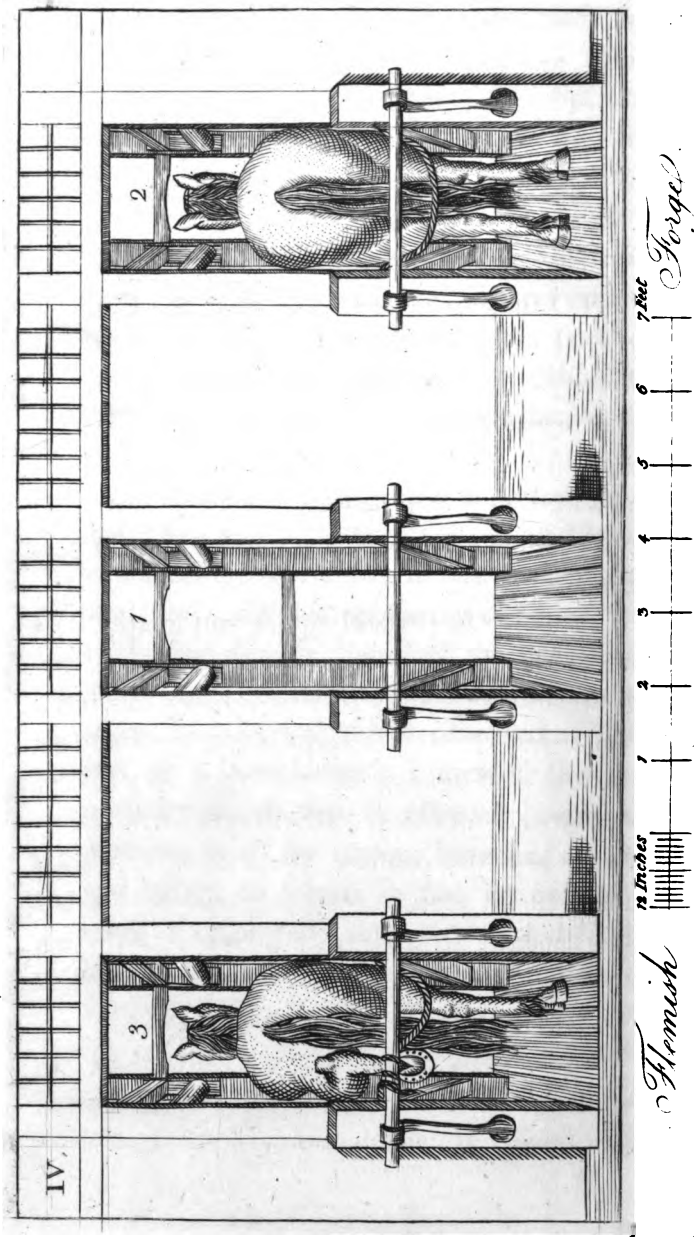
The good plight of the work-horses is quite respectable; not indeed that hard and shining condition, which is justly prized with us, but an extreme fatness, which, however, does not appear to impede their work, or injure their constitution. Notwithstanding a high and arched crest, there must be a thickness of flesh upon the rib also, or the farmer is not satisfied: nor does this good keep and pampered appearance cause them to be less manageable in draft at their different occupations. With every symptom of sufficient spirit, they are docility itself; and besides being obedient to the word, are guided in intricate cases, in a mannersurprising to a stranger, by a single cord; this rein is never thick, and, in some instances, is as small as a stout whip-cord, and yet in the deeper soils three powerful horses abreast (the bridles of the middle and off-side horses being connected with that upon the near-side horse, to which this rein is affixed), are guided by it at all the turnings, the ploughman holding the rein in one hand, and his single-handled plough in the other, and performing his work with the most accurate straightness and precision.

In the light soils, one of those horses is suffi-

cient for a plough. For moderate loads, and on the *chaussée*, or paved road, one is sufficient; also for the *chariot*, or great cart; but in general, two are applied, because the farmer, before he reaches the *pavé*, or highway, may have some distance of the *chemins de terre*, or unpaved roads, to compass, which are so deep and bad (even in summer) after rain, and, uniformly, through the open part of the winter, that the wheel often sinks to its nave, and no single horse can surmount the difficulty.

Of corn to market, a pair of horses generally draw two tons; of manure to the field, one ton and a half; and on the pavement in the towns, three tons, without appearing to be overloaded.

Having already remarked the excellent form of the hoof, which is preserved in its natural state; and having never observed a defective foot, or a lame horse in Flanders, the management by which this is effected (being of importance in all the various branches of pleasure and utility, in which so fine an animal as the horse is employed), shall be detailed in the following Chapter, under the description of the Flemish forge.



CHAP. XV.

SECT. I.

The Flemish Forge.

TO those who have not seen the Flemish forge, the annexed engraving may be matter of curiosity. It is intended to delineate the manner of securing the most vicious horse from the possibility of injuring the person who shoes him; and who is thus enabled to go about his work without apprehension, and to perform it with care.

If the horse be perfectly quiet and gentle, it is obvious that he may be carefully shod without this apparatus; but as there are many instances to the contrary, it is thought right in Flanders to be provided against all contingencies; and of the multitude of towns and villages, which embellish the entire country, there is not one to be found without a forge of this description. Should it be thought expedient to adopt it with us, even for unruly horses, the drawing, which is by a precise scale, may be satisfactory.

Who is there, that has not witnessed repeated instances of the necessity of throwing horses down, at considerable risk, and of bind-

ing them with ropes, in order to shoe them securely in this inverted and awkward position? Who, that breeds many horses, and disposes of them at distant fairs, has not regretted the trouble, the difficulty, and the danger of having ten or twenty colts shod, wild from the pastures, and then, for the first time, committed to the hand and knee of some unlucky, but undaunted blacksmith?

In the Flemish forge, the only difficulty which occurs is now and then encountered in forcing an obstinate animal into the narrow stall; once lodged there, he is in a moment, as it were by magic, deprived of all power of resistance; and the foot first to be attended to, is in as summary a manner made fast for the operation.

Should the horse be extremely vicious indeed, he can be raised from the ground in a minute, by means of a cradle-sling of strong girth web, hooked to the upper side-rails, which, with a slight hand-spike, are turned in the blocks that support them (the extremities of the sling thereby coiling round them), till the horse is elevated to the proper height, and rendered wholly powerless.

But where the degree of vice is not in the extreme, the necessary sleight is merely to secure at the same moment the two chains across the neck and hams. Then by a noosed rope, the

foot first to be shod is instantly drawn up, and fastened to a rail : if the fore-foot, to the side-rail ; if the hind-foot, to the bar in the rear ; and the preparation of the hoof, as well as the shoeing, proceeds leisurely and securely.

Whether it be due to this uninterrupted driving of the nails, or to the form in which they are made and countersunk, or to the toughness of the iron of which they are composed, or to all these circumstances combined, that the shoes hold on longer than with us, the fact is so, as experience testifies, and the habit of the country confirms ; two months being the regular interval for shoeing such horses as are used upon the pavements, and a still greater one for those employed merely upon the farm : indeed in this latter case, the hinder feet are in many instances left unshod ; a species of economy which, not being injurious to the animal in a soil free from gravel and stones, is perfectly admissible.

SECT. II.

Treatment of the Foot, and manner of Shoeing.

HAVING noticed in the foregoing Chapter, the perfect form of the foot of the Flemish horse, this becomes the proper place to account for it.

Though it is the boon of nature, yet must it be preserved by art, when the hand of man has once prepared it for his own occasions; and to the skilful blacksmith we must resort for the necessary means.

In Flanders it is effected by the practice of a similar system to that which was first introduced into England, by the useful publication of Strickland Freeman, Esq. and which has been since adopted, and pretty generally circulated through the united kingdom, by the works and practice of Mr. Colman and other veterinaries, viz. that of preserving the bars of the hoof, and of letting the frog (uninjured by the butteridge) always come in contact with the ground; thus bringing into action their natural property of affording to the heel the expansion requisite to furnish space to the numerous blood-vessels and cartilages in the interior of the hoof, for the performance of their necessary functions.

For this purpose, the absence of the butteridge is not alone sufficient; the form of the shoe is likewise essential; and in Flanders, as under the veterinary practice with us, the pernicious use of cockers, or turned heels, is (except in frost) entirely abandoned. By these means, corns, thrushes, and contracted heels are avoided.

In the frost, it becomes necessary to use some precaution; which is in most cases contrived by

countersunk frost-nails, and by temporary cockers of hammer-hardened iron, screwed in to the heels of the shoes, and not more than three-fourths of an inch in height; so as to alter as little as possible the level position of the foot.

The pavements of Flanders, both in the towns and on the chief roads, are better and smoother than those in London, and yet cockers are found to be not only unnecessary but injurious. Any person who has the opportunity of remarking the disparity between the feet of the Flemish work-horse and those of the famous dray-horses of Liverpool (where remarkably high cockers are used; to the destruction of the heel and foot); will soon be able to appreciate the value of each method of shoeing.

That which is practised in Flanders resembles more the method recommended by Strickland Freeman, than that which Mr. Colman prescribes, in directing the shoe to be made short, and gradually thinner from toe to heel: both Mr. Freeman's and the Flemish method preserve an equal thickness of the rim all round, and make the shoe of such a length, that its heels or extremities may rest upon the horny junction of the hoof and bars.

In two respects, however, the shoeing in Flanders differs from any of the methods in use with

222 Treatment of the Foot, and manner of Shoeing.

us. In *one*, that, to prevent tripping, the hoofs of the fore-feet are pared away towards the toe, and the shoes so fitted, that the fore part shall not touch (within three-fourths of an inch) the same level surface, upon which the heel and middle of the shoe shall rest.

This preparation of the foot, and formation of the shoe, without a controversy, is best to be defended, by its being in general use, and by two other circumstances, that the horses are not thereby in any degree injured, and, that they are particularly sure-footed.

The other point of difference is one, which could not be adopted in our countries without consequent lameness. With us the inside of the shoe is bevilled, or even in the worst mode of shoeing, is hollowed in such a manner as to allow room for a picker to go round as far as the seat of the nails, to prevent the settlement of any pebble or gravel between the shoe and foot, which might press against, and injure the tender sole : but in Flanders, where neither pebbles or gravel ever occur, but merely pavement, sand, or clay, this precaution is unnecessary, and the shoe is nailed on, flat and close to the foot, which, in depriving the iron of all spring, and all unequal pressure against the nails, may be in part the cause of the durability of the shoeing. This cannot be transferred with safety into our prac-

tice ; but the flat heel may (not only under the authority of Flemish usage, but from the dictates of common sense), to the prevention of many diseases of the foot, which lead to incurable lameness.

CHAP. XVI.

SECT. I.

Agricultural Circumstances and Remarks respecting Eastern and Western Flanders generally.

THE object of dividing those provinces into eleven districts, marking thereby the changes of soil, and a considerable variation in the rotation of crops, was for the purpose of giving a clearer and more distinct view of Flemish management, than could be done by speaking of the country generally.

In that respect, great misapprehension had prevailed. It is surprising how very little concerning it was known in our countries, till after Sir John Sinclair's visit to the Netherlands, which, unfortunately for the public, was rendered of short duration by the military circumstances of that period.

Flanders was in general believed to be a soil of extreme natural richness; whereas, with the exception of some few districts, it is precisely the reverse; and was by many considered the emporium of drill husbandry, which is altogether unpractised and unknown in the country.

To the author of this Report, before he left England, the district around Ostend was represented as unworthy of his attention, from being the worst quality of soil; and that beyond Bruges particularly pointed out to him, as the best. Upon personal investigation, he found the first, to be the strongest and best soil in Flanders; and the latter, little better than a pure sand.

This striking contrast as to soils, and the misapprehension respecting them, decided him to separate the area he was to inspect, into particular divisions, which he has treated of respectively; reserving a few circumstances which apply generally to all, to be noticed in the following Sections.

SECT. II.

The Number of Ploughings generally given in the Flemish Courses.

FLANDERS is remarkable for the reiterated use of the plough in the production of its crops. Either in strong or light ground, it seems to prevail alike; in the former, for the sake of pulverization as well as cleanliness; in the latter, chiefly for the destruction of weeds, and blending the manure with the soil. But considering that but one pair of horses is in general allowed to

222 *Number of Ploughings in the Flemish Courses.*

about thirty acres, it is surprising how (with the execution of all the other farming works), time can be found for the number of ploughings which are universally given.

In the Pays de Waes, as has been mentioned, and in the district of Termonde (Division No. X.), in both of which trenching is chiefly practised, fewer ploughings take place; but even there, from what has been stated, the number will be found far to exceed that of British or Irish usage.

In the other parts of Flanders, very generally, the number, for the various crops respectively, is as follows :

For <i>Wheat</i> ,	Two ploughings, with two harrowings.		
<i>Rye</i> ,	Two or three	ditto	ditto.
<i>Oats</i> ,	Three	ditto	ditto.
<i>Potatoes</i> ,	Four	ditto	ditto.
<i>Carrots</i> ,	Four	ditto	ditto.
<i>Flax</i> ,	Two	ditto	ditto.
<i>Buck-Wheat</i> ,	Four	ditto	ditto.
<i>Rape</i> ,	Three	ditto	ditto.
<i>Barley</i> ,	Three	ditto	ditto.
<i>Oilleittes</i> ,	Two	ditto	ditto.
<i>Tobacco</i> ,	Four	ditto	ditto.
<i>Hemp</i> ,	Four	ditto	ditto.
<i>Turnip</i> ,	{ Three as a first crop,		ditto ditto.
	{ One as a second crop,		ditto ditto.
<i>Spurry</i> ,	{ Three as a first crop,		ditto ditto.
	{ One as a second crop,		ditto ditto.
<i>Beans</i> ,	Two		ditto ditto.
And,			
For <i>Fallows</i> ,	Four or five		ditto ditto.

There must be some good reason for this apparent superabundance of labour. Whatever theory or fancy might prevail amongst a few individuals, no people generally, however industrious, would voluntarily tax themselves with such an increase of trouble and exertion, if it were not conducive to profit.

Upon this frequent stirring of the ground they rely, as has been remarked, not only for good tilth, but for an equal mixing of the manure, and for the eradication of weeds. Hence proceed those magnificent crops of clover for which Flanders is remarkable; and to the same cause may be referred an obvious saving of seed, not only in that, but in many other crops, comparatively with the quantities sown in our countries.

To accomplish the number of ploughings considered necessary in Flanders, *Flemish* industry and attention appear to be essential.

SECT. III.

Implements of Agriculture in Flanders.

The Flemish Plough.

In a country where cultivation is carried on, so as to represent the neatness and accuracy of a garden, one naturally looks for implements of

suitable perfection ; but in Flanders, this expectation will be attended with some disappointment. They are executed rudely, and cheaply, but with an attention to strength and durability. Some few of them are very worthy of notice ; and of this description are the plough, the mouldebaert, the Hainault scythe, and the kylanderie ; all which, except the Hainault scythe, are given by a scale, in Plates III. and IX.

The manner of using the mouldebaert and Hainault scythe, has been detailed in pages 115 and 124. The plough and the kylanderie, shall now be mentioned.

The plough, as represented in Plate III. Figure 2, is of an extremely rude appearance ; but it follows lightly, and makes excellent work ; the single handle gives the impression of unsteadiness ; but upon holding it, this apprehension vanishes ; the furrow-slice is cut rectangularly ; the furrow itself is perfectly swept ; the heel of the plough presses equably, and the handle gives very little trouble to the holder. In the loose soils they are in the habit of ploughing wide and flat ; and even in those that are more tenacious, the work is not executed in the lozenge form, and with that fine edge, so much prized with us ; but there is little doubt that the plough might be so set, as to produce this effect, chiefly advantageous in furnishing a supply of mould,

where the crop is to be sown upon one ploughing, but not necessary in Flanders, where, almost in all cases, frequent ploughings are given.

No opportunity occurred of trying the resistance of these ploughs ; but they appeared to work with extraordinary lightness. Their scale varies in proportion to the quality of soil ; that which appears in Plate III. is of a middle rate ; but the principle never varies ; and from a rabbit sand ploughed by a single ass (as was the case to the east of Ghent, in Division No. IX.), to a stiff and retentive clay near Blankenberg, ploughed by three powerful horses, in Division No. I., the operation of these ploughs, varying only in their dimensions, was creditable and sufficient.

Some of them have the mould-plate to the right, and some to the left of the beam ; the latter at the fancy of the farmer or holder of the plough, who, upon breaking in young horses, finds it better to manage them with the right hand, and as he walks the furrow, and applies his left hand to the handle of the plough, it becomes necessary to have the mould-board at the opposite side.

This simple implement is found to execute even deep work so well, that the Walloon plough, with a fore-carriage and high spoke-wheels (much used in Brabant), is seldom resorted to in Flanders.

The cost of the Flemish plough is according to the scale upon which it is constructed, from 2*l.* 10*s.* to 3*l.* 10*s.* British.

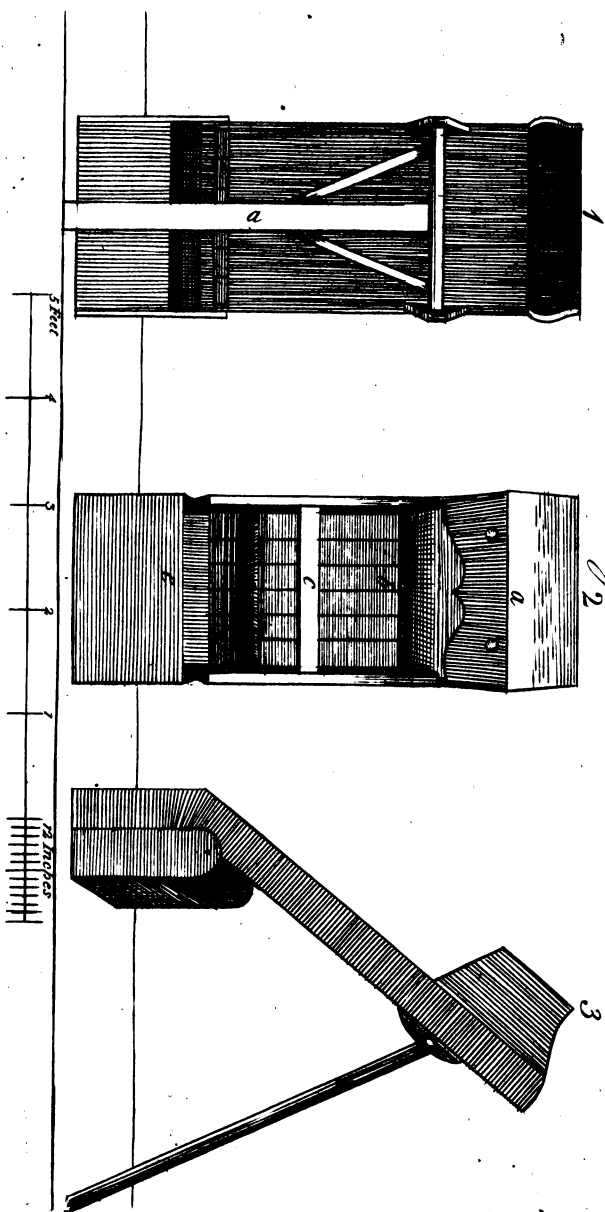
SECT. IV.

The Kylanderie.

THE Kylanderie is represented in Plate IX, The front appearance, Fig. 2; the rear, Fig. 1; and the side-view of the implement, Fig. 3. It derives its name from a little black insect called the kylander, which infests the corn, when long kept over in the granaries, and for the abolition of which, this is effectual. In speaking of implements, it cannot be passed over, though it may not be correct to introduce it amongst those in general use, as it did not occur in many places; but its merit seems to be such, as to recommend it to general notice. It in some measure resembles a gravel-skreen, but instead of having the corn dashed by the shovel against a grating, it is delivered into a hopper, and in a pretty rapid fall along the wires, is, as appears by the engraving, checked by cross-bars at certain intervals, but so rounded, as to let it come over by its own impetus; the wire being so constructed, as to let those insects, and every thing else pass through, except the marketable

IX

The Highlanders?



grain. This renders it of still greater importance to the farmer than was looked to by the original intention ; for with the insect, all seeds of weeds, all dirt and weak corn, are at the same time extracted, and where none of those insects exist, it is nevertheless valuable in its capacity of preparing corn for seed or market.

That admirable invention, the *separator*, now in use in every well-appointed distillery and brewery, if upon a scale adapted to farming purposes, would be a most enviable acquisition. It has been attempted, but in general without much success, or if the instrument has been tolerably good, it has been at the same time placed beyond the reach of the common farmer, by being proportionably costly. Twenty guineas is no unusual price for a farmer's separator, whereas the simple article mentioned here, is made in Flanders for about 26s., and probably might be executed with us for about 2l. It is light and portable ; can be worked in any situation, will rid the winnowed corn of all improper mixture, and, according to the quality of the grain, will deliver the best sample that the case will admit of.

Of the other implements, suffice it to say, that they do the work, and are cheaply executed ; but in other respects, are not to be brought forward as models for British farmers.

SECT. V.

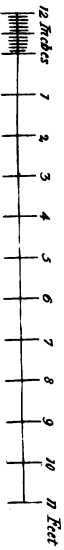
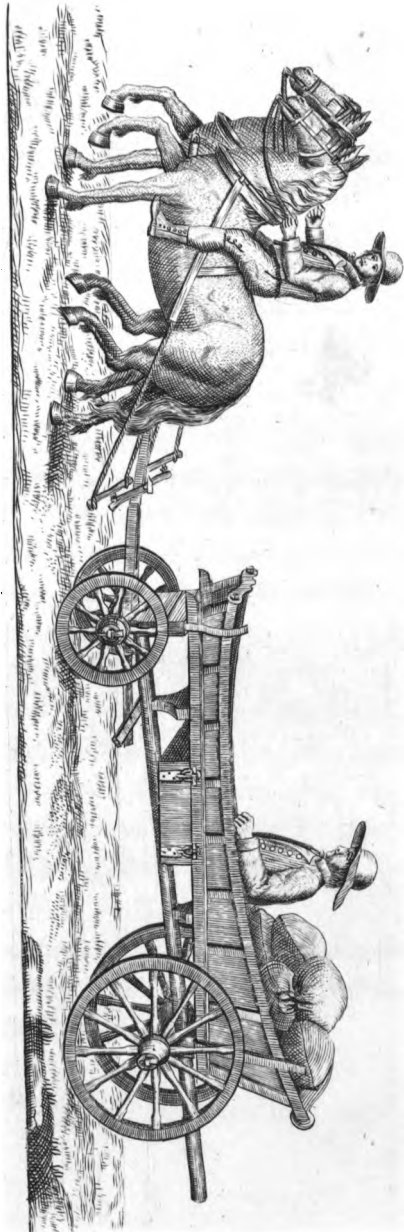
Prices of Farming Implements in Flanders.

THE usual prices are as follow :

	£	s.	d.	£	s.	d.	
Plough	2	10	0	to	3	10	0 British.
Harrow	0	12	0				
Sledge	0	18	0				
Turnbril and harness	3	0	0				
Cart and ditto	9	0	0				
Roller	3	10	0				
Mouldebaert	3	10	0				
Winnowing-machine	3	0	0				
Kylanderie	1	5	0				
Hainault scythe	0	6	0				
Chariot, or great cart	14	0	0				

This last-mentioned appendage to the farmer's establishment, is the only part of it which appears to transgress the bounds of a rigid economy. This, as it is not only to be used for the transport of grain, but of the farmer and his family occasionally, to the market-town, is more ornamentally finished than any other, and is painted in shewy colours, chiefly green and red ; an awning also is very ingeniously contrived as an occasional defence against the rain or sun. From the natural spring of so long a perch, the centre part of this machine is by no means an

The Chariot or Farmer's Cart.



uneasy conveyance; and there the farmer sits in all solemnity, whilst a well-appointed boor acts as a postilion, and his fine and spirited pair of well-trained horses bring him home from market at a rapid trot. An accurate engraving of the whole is given in the annexed Plate X. not for the purpose of recommending its adoption in our countries, but of shewing the costume of theirs, which is here accurately delineated; and though the *cart* may not be so presentable, yet what rational landlord would not have pleasure in seeing his tenants and their farm-servants equally well clad, and the farm-horses of a description so respectable? Even the cart, notwithstanding its awkward length and boat-like form, by no means suited to our purposes, is nevertheless particularly adapted to their deep and uneven roads, which must have originally given rise to such a distance between the fore and hind wheels, thereby giving one-half of the carriage a chance of being on firm ground, whilst the other has its wheels sunk perhaps two feet deep in some of the sloughs which abound in all their farm-roads.

The *binot*, recommended by Sir John Sinclair, is used in Brabant, but not in the provinces treated of in this Report.

SECT. VI.

Manures of Flanders.

It has been seen throughout this work, how much the Flemish farmer relies upon manure for almost every production of the earth; the surest test of an inferior soil; yielding, nevertheless, by this attention, an average produce exceeding that of other countries.

The different kinds of manure, with the quantities applied to the respective crops, have been stated, according to the usage of the districts which have been distinctly under our observation. It may be satisfactory, however, to recapitulate them, as in *general* use, with the average value of each sort, which will point out the comparative estimation in which they are held.

Manure being in Flanders in some measure an article of trade, the selling price of each description is easily ascertained; and that it should not be infinitely higher, where the demand is so great, can only follow from the numbers occupied in collecting it with unceasing industry.

Every substance that constitutes, or is convertible to manure, is sought after with avidity, which accounts for the extreme cleanliness of the Flemish towns and pavements, hourly resorted to, with brooms and barrows, as a source of

profit. Even the chips which accumulate in the formation of wooden shoes, worn by the peasantry, are made to constitute a part of the compost dung-heap; and trees are frequently cultivated in barren lands, merely to remain till their deciduous leaves shall, in course of time, have formed an artificial surface for the purpose of cultivation.

The manures in general use, are,

1st, *The Farm-yard Dung*—Which is a mixture of every matter that the farm-yard produces, formed into a compost, which consists of dung and litter from the stables, chaff, sweepings, straw, sludge, and rubbish, all collected in a hollow part of the yard, so prepared as to prevent the juices from being wasted; and the value of this by the cart-load of 1500 lb. of Ghent, is estimated at five francs*.

2d, *The Dung of Sheep, Pigeons, or Poultry*—By the same cart-load, five francs and a half.

3d, *Sweepings of Streets and Roads*—Same quantity, three francs.

4th, *Ashes of Peat and Wood mixed*—Same quantity, eight francs.

5th, *Privy Manure and Urine*—Same quantity, seven francs.

6th, *Lime*—Same quantity, twenty-four francs.

7th, *Rape-cake*—Per hundred cakes†, fifteen francs.

* 1500 lb. of Ghent, are about 13 cwt., and a franc is in France 10d. and in Flanders, 11d.

† Each cake of rape weighs 2 lb.

Gypsum, Sea-mud, and the Sediment of the Canals—Have been all tried experimentally, and with fair results, by Mr. Wieland; but the two former have been merely *tried*; the latter is used successfully in the vicinity of Bruges.

Bone Manure was altogether unknown in Flanders; but, at the suggestion of the Author of these remarks, is now under experiment in that country*.

* Whatever the manure or preparation may be, it is a maxim, that it be not wasted by evaporation, or by too much moisture. The dung-heaps are gradually formed in the fields where they are to be applied, and receive a light covering of earth, which imbibes the fertilizing particles, and prevents their escape.

CHAP. XVII.

SECT. I.

Further Circumstances respecting Eastern and Western Flanders generally.

Woodlands.

THE provinces which we have been considering, do not possess any feature more striking, than that of their woodlands and plantations; by means of which, with the embellishment of numerous spires, a great tract of country as level as a strand, and in many places originally as sandy, presents a rich and interesting scene, even to the eye of the traveller; but to that of the agriculturist, one of profit, shelter, improved climate, and ameliorated soil. It is well known that all these advantages result from judicious plantations.

In Flanders, the zeal for planting perhaps exceeds what might be termed judicious. The occupier, in some instances, would be better pleased with more open and extended fields; but still, the injury which his harvest might be supposed to suffer from too much shelter, is re-

mediated by his industry and skill, and even he is remunerated by the use of a certain description of the wood, whilst the proprietor enjoys a permanent property, exclusive of the soil, and a never-failing source of profit, independent of the rent.

The nature of this property, as it affects the farmer and proprietor, the advantage also of reclaiming heathy and waste lands by the seeds of trees, have been mentioned, as to particular districts, in different parts of this Report. It may not be amiss, however, in speaking of those provinces generally, to notice the royal forests, which, though not perhaps receiving the minute attention bestowed on individual possessions, may nevertheless serve to shew the usual habits of the country with respect to the management of woodlands.

SECT. II.

State of the Royal Forests in the Province of Western Flanders.

In this province the royal forests are five in number: Wynendale, Muncken, St. Six-ten, Houthulst, and Zonnebeke. They contain 3880 hectares, being 9583 $\frac{1}{4}$ th English acres; and are superintended by eighteen persons, viz.

an inspector, resident at Bruges ; a deputy inspector, resident at Ypres ; two *gardes generaux*, and fourteen *particuliers* or privates. The inspector is answerable for all: from him the *garde general* takes his instructions, and sees that they are enforced by the privates, to whom is committed the regulation of the necessary labour.

The cuttings take place periodically, with respect to small trees and firewood, so as to secure an annual produce ; but reserves are always left to become, eventually, large and valuable timber. The net produce of the last year, upon the extent stated, was 86,000 francs, being 3588l. 6s. 8d. at 24 francs to the pound, British.

The Forest of Wynendale, in the commune of Thorout, formerly belonged to the Elector Palatine, and the old castle still exists. This forest, though not of the extent of some others, is considered perhaps as valuable, and presents the most regular arrangement as to cutting and replacing the trees best adapted to profitable purposes. Here, the cutting of the *taillis* or coppice chiefly used as firewood, takes place every eleventh year ; that of the high and grosser coppice every twenty-fifth year ; the felling of the half-grown forest trees every sixtieth year ; and that of the full grown forest trees, once in a

hundred years. These were the old regulations, and still exist, though war and the want of money causing considerable deviations, have occasionally deranged the order of the cutting; nevertheless, a surprising degree of regularity still prevails. The extent of this forest is 670 hectares, being 1655 English acres.

By a return made to the Bureau of the Prefect about ten years back, it appears that the cutting of four years was as follows :

	<i>Hectares.</i>		<i>Ares.</i>		<i>English Acres.</i>	
1st year	31	...	35	.....	77 $\frac{1}{4}$ th	} Under Firewood.
2d year	4	...	36	.....	10 $\frac{1}{4}$ th	
3d year	50	...	98	.....	126	
4th year	52	...	84	.....	130 $\frac{1}{2}$	
	<hr/> 139		<hr/> 53		<hr/> 344 $\frac{1}{2}$ th	

Number of Trees, &c. cut down.

	<i>Trees.</i>		<i>Lesser Trees.</i>		<i>Firewood.</i>
1st year .....	—	.....	—	.....	8175
2d year	745	.....	4075	.....	1375
3d year	464	.....	1475	.....	1900
4th year	341	.....	2155	.....	7750
	<hr/> 1550		<hr/> 7705		<hr/> 19200

From this it may be seen, that the cuttings of the respective years vary from each other.

The price also is affected by circumstances,

and depends on the quality of the wood, the mode of payment required, and the nature of the demand. One year with another, the extent cut in this forest is about 34 hectares, being 84 English acres: the price by the hectare of firewood about 138 francs—5*l.* 15*s.* British.

The average number of trees, great and small, annually cut, about 2300; average value per tree 4½ francs, 3*s.* 9*d.* making the yearly produce of the Forest of Wynendale, according to the foregoing return, 15042 francs, or 626*l.* 15*s.* British, increased since that time to 18,000 francs, being 750*l.* British.

SECT. III.

Forest of Muncken, &c.

THIS Forest is situated in the commune of Oostcamp, in the vicinity of Thorout, and abounds more in pines than any of the rest. Here they cut the firewood every ninth year; the other trees at the same periods as in the Forest of Wynendale. The extent is 350 hectares, being 864½ English acres.

The produce of four years, according to the return already mentioned, was as follows:

	<i>Hectares.</i>	<i>Ares.</i>	<i>English Acres.</i>
1st year	33	85	83 $\frac{1}{2}$ th
2d year	16	57	41
3d year	10	95	27
4th year	87	-	214 $\frac{2}{5}$ th
	<u>148</u>	<u>37</u>	<u>366$\frac{1}{2}$</u>

Number of Trees, &c. cut down.

	<i>Trees.</i>	<i>Lesser Trees.</i>	<i>Finewood.</i>
1st year	—	—	5143
2d year	—	1632	3216
3d year	1779	400	3000
4th year	980	—	2282
	<u>2759</u>	<u>2032</u>	<u>13641</u>

One year with another, the extent cut in this Forest is about 37 hectares of firewood, being 91 $\frac{1}{2}$ th English acres; the price by the hectare 191 francs, 7*l.* 19*s.* 2*d.* British. Average number of trees cut annually, 1198. Average value per tree, 74 cents, or 7 $\frac{1}{2}$ *d.* making the total yearly produce 7946 francs, or 330*l.* 18*s.* 4*d.* British, increased since that time to 9000 francs, being 375*l.* British.

Forest of St. Six-ten.

THIS Forest lies near Cromberke, and consists almost entirely of firewood, which is cut every

seventh year.—The extent is 860 hectares, being 869 $\frac{1}{2}$ th English acres.

The produce of four years was as follows :

	<i>Hectares.</i>	<i>Ares.</i>	<i>English Acres.</i>
1st year	69	46	171 $\frac{1}{2}$ th
2d year	95	15	235
3d year	37	46	92 $\frac{1}{2}$
4th year	25	42	62 $\frac{3}{4}$ th
	<hr/> 227	<hr/> 49	<hr/> 561 $\frac{2}{5}$ th

Number of Trees, &c. cut down.

	<i>Trees.</i>	<i>Lesser Trees.</i>	<i>Firewood.</i>
1st year	—	—	23600
2d year	—	—	20635
3d year	—	—	6225
4th year	—	—	7507
			<hr/> 57967

The average cutting made annually in this Forest, is about 57 hectares of firewood, being 140 $\frac{1}{2}$ th English acres. The price by the hectare, 255 francs—10*l.* 12*s.* 6*d.* British.

The present produce, 1500 francs, being 62*l.* 10*s.* British.

Forest of Houthulst.

THIS Forest is situated near Ypres, and has

grosser timber than the former. The cutting of the firewood takes place every fourteenth year. The extent is 2000 hectares, being 4940 English acres.

The produce of the four years was as follows:

	<i>Hectares.</i>	<i>Ares.</i>	<i>English Acres.</i>
1st year	132	50	327 $\frac{1}{4}$ th
2d year	172	69	426 $\frac{1}{2}$ th
3d year	141	9	348 $\frac{1}{2}$
4th year	181	84	449 $\frac{1}{4}$ th
	<hr/> 628	<hr/> 12	<hr/> 1551 $\frac{1}{4}$

Number of Trees, &c. cut down.

	<i>Trees.</i>	<i>Lesser Trees.</i>	<i>Firewood.</i>
1st year	—	—	24069
2d year	—	—	19500
3d year	—	—	19669
4th year	60	610	17097
	<hr/> 60	<hr/> 610	<hr/> 80335

The average cutting made annually in this Forest is about 157 hectares of firewood, being 387 $\frac{1}{4}$ th English acres; the price by the hectare about 128 francs, 5*l.* 6*s.* 8*d.* British; average number of trees cut annually 167, average value per tree, ten francs, or 8*s.* 4*d.* British, making the yearly produce 21766 francs, or 906*l.* 18*s.* 4*d.* British at that period; now 35000 francs, being 1458*l.* 6*s.* 8*d.* British.

Forest of Zonnebeke.

THIS Forest lies near Courtray, and contains some gross and profitable timber. Its firewood is not so valuable as that of other situations; the cutting takes place every ninth year. The extent is 500 hectares, being 1235 English acres.

The produce of the four years was as follows :

	<i>Hectares.</i>		<i>Acres.</i>		<i>English Acres.</i>
1st year	55	...	81	.....	137 $\frac{6}{7}$ th
2d year	67	...	16	.....	165 $\frac{7}{8}$ th
3d year	85	...	91	.....	212 $\frac{1}{2}$ th
4th year	51	...	2	.....	126
	<hr/> 259		<hr/> 90		<hr/> 642

Number of Trees, &c. cut down.

	<i>Trees.</i>		<i>Lesser Trees,</i>		<i>Firewood.</i>
1st year .....	—	.....	—	.....	5265
2d year	216	.....	2940	.....	6825
3d year .....	—	.....	—	.....	4175
4th year .....	—	.....	—	.....	7950
	<hr/> 216		<hr/> 2940		<hr/> 24215

The average cutting made annually in this Forest, is about 65 hectares of firewood, being 160 $\frac{1}{2}$ English acres; the price by the hectare, about 93 francs—3*l.* 17*s.* 6*d.* British. Average number of trees cut annually 789. Average value per tree, great and small, about four francs,

246 *Scattered Wood belonging to the Government.*

3s. 4d. British ; making the yearly produce 9201 francs, 383l. 7s. 6d. British, at that period ; now, 9000 francs, being 375l. British.

SECT. IV.

Scattered Wood belonging to the Government.

EXCLUSIVE of the Forests above mentioned, there are within the province of Western Flanders, of the same species of property, all the trees on the sides of the public roads, as well as distinct parcels of coppice, which being scattered over the entire surface of the department throughout all its districts, serve to stamp, by the sale of their produce, a fair middle price of the public coppice-wood by the hectare.

The cutting of these scattered pieces for the four years above mentioned, amounted in extent, annually, to 371 hectares, 27 ares (being 917 English acres) ; and in money to 98,551 francs, or 265½ francs by the hectare, being, by the English acre, 4l. 10s.

The scattered trees cannot be so equally valued, because they are not cut at their proper maturity, but when they fail, are broken, or torn up, by the wind. It is not so with the woods of individual proprietors, which are attended with as much care as the arable lands, and are, by these

means, never suffered to fall off, but are continued in a progressive state of improvement.

Management of Coppices.

IN this flat country it is considered essential to preserve the roots from stagnant water: the trenches originally formed for that purpose, are from time to time cleared out; and the sediment and manure from the falling leaves, which have accumulated in them, are carefully spread upon the ridge, or rounded set, which the wood occupies. A second branch of regular attention is to remove all brambles and briars. A third, to replace the old and fading stocks by new plantations. A fourth, to thin the stems with so much regularity and care, that the produce of coppice-wood, thus attended to, may be fairly valued at 325 francs, as the middle price by the hectare, being 5*l.* 10*s.* 2*d.* by the English acre.

Varieties of Trees.

THE following trees are general throughout this province:

The Birch—Planted in coppice in the sandy lands.

The Oak—In high forests, and also in coppice.

The Service—Chiefly in coppice.

The Ash—Chiefly in strong lands.

The Maple—

The Elm—Of three varieties.

The Beech—Planted in heaths and waste ground reclaimed.

The Poplar—Of the country, of Italy, and of Canada.

The Pin du Nord, and the Sapin—These both suit reclaimed heaths.

The Weymouth Pine—Grows quickly, and is much esteemed for its beauty.

The Plane—

The Linden—

The Aspen, or Peuplier tremblant—This is planted along the edges of fields, and, if cut before it begins to decay, is here considered valuable in buildings.

The Larch—

The Sweet Chesnut—Latterly this tree has been planted for coppice, as its fruit does not ripen in Flanders.

The Alder—Planted in low and strong lands.

The foregoing are the trees in general use ; but in the demesnes of gentlemen many others, as well as some curious varieties of American trees and shrubs, have been introduced, and thrive remarkably well.

A variety of the pine is particularly deserving of attention, as applicable to a purpose, for which almost all others have been found inadequate ; and which shall be noticed in the following Section.

SECT. V.

Planting by the Sea.

ALONG the coast, from Blankenberg towards Nieuport, from certain positions of the shoals, and circumstances of the tide and wind, not necessary to be detailed here, the sands or downs which form the natural barrier are gradually becoming of so shifting a nature, that there is much reason to apprehend a dangerous incursion of the sea. The Baron de Serret, already mentioned in this Report, a gentleman of intelligence and research, was, on this account, preparing a memoir upon the subject of planting near the sea. He conceives that the sand-banks may thus be fixed and strengthened as a barrier.

The great difficulty has ever been, to find a species of tree, which will flourish in pure sand, and at the same time survive the western and sea blast.

The Scotch fir has been tried at a particular spot on this line of coast. The trees were beginning to thrive tolerably, when Dunkirk was invaded by the English, and the plantation suffered. A few of the trees, however, which remained, are now doing so well as to tempt the proprietors to renew their efforts.

Near Bourdeaux, on an extensive line of sandy

coast, the feasibility of this improvement has been ascertained.

A successful plantation has been there effected, answering all the purposes of a secure embankment, and solely by that species of fir called the *pinus maritimus*, which possesses the two essential qualities above-mentioned, and has, in that situation, formed a respectable forest.

It is a very handsome fir, and excellent in its timber. The Baron de Serret has had fair trial of its quality, in different farm uses, from trees grown in his own demesne, and brought thither originally at an early age, from those very plantations by the sea, near Bourdeaux.

Two circumstances, however, must be observed respecting this species of the fir tribe: it is more liable to injury by frost, than the other kinds; and is very delicate in its early growth.

The first of these objections would not affect Ireland, or even Great Britain, where the frost, in point of severity, is not to be compared with that of Flanders, in which country the tree appears to thrive. To the latter objection a remedy must be applied by temporary shelter.

If this fir once attain the height of two feet, all is safe; and this may be accomplished by raised banks, or perhaps by hedges of broom; one belt of plantation being formed, there can be no further difficulty in raising within that,

any depth or succession of woods that may be required.

SECT. VI.

Beetrave, or Mangel-wurzel.

As food for cattle, this plant is not in use in Flanders, nor is it at present used there for any other purpose ; but as it was once cultivated very extensively, for the production of sugar, it may be expected that it should not be passed over in silence, and without accounting for its discontinuance.

At the time the French government encouraged the manufacture of sugar from this root, experiments were made on a considerable scale, and with great success, in the town of Bruges. The machinery was unexpensive, and the remaining cost was merely that of the manual labour, and a moderate consumption of fuel. The material itself came at a very low rate—about 10s. British, by the ton ; and to this circumstance may be chiefly attributed the cessation of the manufacture. Instead of encouraging the cultivator, the government leaned altogether to the manufacturer, and made it imperative on every farmer to give up a certain proportion of his land to this root, without securing to him a fair remunera-

tion. The consequence was, that the manufacturers, thus supported, and taking advantage of the constrained supply, have in many instances been known to refuse payment even of the *carriage* of a parcel, in other respects sent in gratuitously; and a consequence still more natural was, that the farmers, whenever they had the opportunity of shaking off so profitless a crop, converted the space it occupied to better purposes.

To the manufacturer the profit was ample: an equal quality of sugar with that of the West Indies, which at that time sold for five shillings a pound, could be produced on the spot from mangel-wurzel, at less than one shilling by the pound: and to such perfection had the sugar thus made, arrived, that the Prefect, Mayor, and some of the chief persons of Bruges, who were invited by a manufacturer to witness the result of his experiments, allowed the specimens which he produced, to exceed those of the foreign sugar.

The process then used was simple: a cylindrical grater of sheet iron was made to work in a trough, prepared at one side in hopper form, to receive the clean-washed roots of the beetrave, which, by the rotation of this rough cylinder, were reduced to a pulp. This pulp, when placed in bags of linen or hair-cloth, and submitted to

a pressure resembling that of a cyder-press, yielded its liquor in considerable quantity; which being boiled, and subjected to a proportion of lime, the saccharine matter was precipitated; the liquor being then got rid of, and a solution of sulphuric acid being added, and boiled again, the lime was disengaged; the saccharine matter being then freed from the liquor, granulated, and was ready for the refiner.

The pulp has been found to yield, upon distillation, a wholesome spirit, very inferior, but not very unlike to Geneva. It has been proved excellent as manure, but not valuable as food for cattle, beyond the first or second day from the press.

The foregoing process required but a fortnight to complete it. Some experimentalists have, since that, invented, it is said, a shorter and still less expensive method, which they confine to their own bosoms, till future opportunity may again call this species of manufacture into action.

CHAP. XVIII.

SECT. I.

The Menage of the Flemish Farmer and Labourer.

THIS subject is a natural branch of an Agricultural Report, and although it has been already touched upon occasionally, it may well be admitted to deserve a section to itself. Nothing tends more to the uniform advancement of good farming, than a certain degree of ease and comfort in those who occupy the soil, and in the labouring classes whom they employ. Without it, an irregular, speculative, and anticipating extraction of produce, always followed by eventual loss, is resorted to, in order to meet the emergencies and difficulties of the moment ; whereas, under different circumstances, the successive returns of a well-regulated course, become the farmer's object, rather than the forced profit of a single year ; whilst he himself is thus intrinsically served, his landlord secured, and his ground ameliorated.

It is a pleasure to observe the laborious industry of the Flemish farmer, recruited by intervals of decent and comfortable refreshment ; and not

less agreeable, to perceive the farm-servants treated with kindness and respect.

They uniformly dine with the farmer and his family, at a clean table-cloth, well supplied with spoons, with four-pronged forks, and every thing necessary for their convenience. In Flanders, the gentlemen are all farmers, but the farmers do not aspire to be gentlemen; and their servants feel the benefit.—They partake with them, of a plentiful and orderly meal, which varies according to circumstances. One standing dish, however is universal—a soup, composed of butter-milk, boiled and thickened with flour, or rye-bread, potatoes, salt pork, salt fish, various vegetables, and eggs: fresh meat and fresh fish occur occasionally, though not for daily consumption—add to these, a plentiful supply of butter, or rendered lard, which is sometimes substituted: and when it is recollected that those articles of provision are always made palatable by very tolerable cookery, it will be allowed that the farmer's table is comfortably supplied. The potatoes are always peeled, and are generally stewed in milk; a particular kind of kidney bean, as mentioned before, the *feve haricot*, sliced and stewed in milk also, is a frequent dish. No farmer is without a well-cultivated garden, full of the best vegetables, which all appear at his own table; and apples are also

introduced into their cookery. The great fruit and vegetable markets of the towns are supplied by gardeners, who make that their subsistence; but the gardens of the farmers, unless in case of redundancy, are cultivated wholly for their own consumption.

The farm-servants, as has been mentioned, partake of their master's fare, except in his refreshments of tea, coffee, and beer.

The day-labourers are not so well provided: they have, however, rye-bread, potatoes, buttermilk, and occasionally some salt pork. The labourer is, in general, very well able to support himself by his work: in a country where so much manual labour is required in weeding, the labourer's family is occupied pretty constantly in summer; and in winter they spin. Each day-labourer has, in most cases, a small quantity of land, from a rood to half an acre, for his own cultivation.

In common times, a beggar is scarcely to be seen, except in the towns, and but few there. In the country, habits of industry are kept up till health fails; and to meet the infirmities of age, the poor possess a revenue from pious donations, regulated by the government, and vested by them in commissions, of which the mayors of the different communes are presidents, respectively, in right of their office.

The clothing of the peasantry is warm and comfortable—good shoes, stockings, and frequently gaiters of leather or strong linen, which are sold very cheap: their innate frugality leads them, however, to economize in those articles, substituting on many occasions, coarse flannel socks and wooden *sabots*, both which are supplied in all the public markets, at about eight-pence cost. Their comfortable supply of linen is remarkable; there are few of the labouring classes without many changes. In riding with a landed proprietor through a part of the country in which his property was situated, a neat cottage presented itself: the clipped hedge which surrounded the garden, covered with linen very white, suggested an enquiry, “Whether it did not belong to a washerwoman?”—The answer was, that “it was occupied by a labourer and his family, and that the linen was all their own.” It must, however, be observed, that universally in proportion to the supply, is the postponement of the washing, which causes the greater display, and particularly at the beginning of May, which is a chosen season for this purpose. Any circumstance connected with the cleanliness, health, and comfort of the lower classes, is interesting; and to this of which we have been speaking, a peculiar degree of decency is attached.

If the labourer is comfortable in point of apparel, the farmer is still more so; nor can that of both in appearance be more accurately represented than in Plate X. In home-work, the farmer generally protects his clothes by a smock-frock of blue linen: a great attention to cleanliness prevails throughout.

With respect to the farm-house, the exterior is for the most part ornamented by creepers, or fruit-trees trained against the walls; and within, the neatness which prevails is quite fascinating. Every article of furniture is polished; the service of pewter displays a peculiar brightness; and the tiled floor is purified by frequent ablutions.

The cottage of the labourer, though not so well furnished, is, however, as clean; a frequent and periodical use of water, and the broom, pervades every house, great and small, in the country and in towns—originating perhaps in the necessity of cleanliness, and the public enforcement of it, when Flanders was visited by the plague.

The Flemish farmer seldom amasses riches, but is rarely afflicted by poverty: industry and frugality are his characteristics; he never looks beyond the enjoyment of moderate comforts; abstains from spirituous liquors, however easily to be procured; never exceeds his means; pays

his rent punctually ; and, in case of emergency, has always somewhat to command, beyond his necessary disbursements.

SECT. II.

Manner of feeding Horses in different Districts.

THIS subject has been touched on in different parts of this Report, and it has been stated, that in some places where hay is scarce, the withholding of that species of provender does not affect the condition of the animal. In the following districts, however, hay is made a part of the forage, and the proportions are as follow :

In the district of *Bruges*—Winter feed, per diem, for each horse, seven litres, being six and one-third quarts of oats ; sixteen kylogrammes, thirty-five and one-third pounds avoirdupois of hay. In lieu of fifteen pounds of the hay, thirty-three kylogrammes, (being seventy-three pounds) of carrots.—Summer feed per diem, seven litres, being six and one-third quarts of oats ; clover in the manger, eighty pounds ; four litres of bruised beans are frequently substituted, instead of the seven litres of oats. The drink is water, in which some oil-cake has been dissolved, and whitened with rye-meal, oatmeal, or the flour of buck-wheat.

260 *Manner of feeding Horses in different Districts.*

In the district of *Courtray*—Winter feed per diem, fifteen pounds of hay ; ten pounds of straw ; seven pounds of oats.—In summer, clover, in place of hay, and straw ; quantity of oats the same.—Drink, whitened with rye-meal.

In the district of *Termonde*—Summer feed, five months, six sacs, being 927 lb. of oats ; one arpent, being nearly one one-ninth English acre, clover.—Winter feed for seven months, fourteen sacs, being 2163 lb. avoirdupois, oats ; 600 bundles, six three-fourth lb. avoirdupois each, of hay ; chopped straw and chaff ; quantities vary.

In the district of the *Pays de Waes*—Summer feed for five months, the produce of half an arpent of clover ; ten hectolitres, being twenty-eight two-fifths Winchester bushels of oats ; ten hectolitres, ditto ditto chopped straw.—Winter feed for seven months, twenty-one hectolitres, being fifty-nine three-fifths Winchester bushels of oats ; twenty-one hectolitres, ditto ditto chopped straw ; 4200 lb. of Ghent, being one four-fifths tons English, of hay.

In the different districts a variation takes place in point of regimen ; but the object of all, is to keep up the uniform good condition of their working-horses, in which they are universally successful ; the operations of the farm never meet with interruption or delay, from the fa-

tigue or debility of the horses allotted for its cultivation.

SECT. III.

Manner of feeding Cows, &c. in different Districts.

IN the district of Bruges, the mode of keeping cows is as follows :

In *summer*, where pasturage is to be had, they are left at liberty ; where this is not the case, each cow is led by a rope, and permitted to feed round the grassy borders of the corn fields, which are left about ten feet wide for this purpose.

In *winter*, the kinds and quantity of food for one cow within twenty-four hours, are, straw, eighteen pound ; turnips, sixty pound. Some farmers boil the turnips for them ; others give them raw, chopping them with the spade : one or other operation is necessary, to obviate the risk of the animal being choaked, where the turnips, which is usually the case in Flanders, are of too small a size.

In lieu of turnips ; potatoes, carrots, and grains, are occasionally given ; bean-straw likewise, and uniformly a white drink, prepared in the same manner as for the horses.

In the district of *Courtray*, very little variation

262 *Manner of feeding Cows, &c. in different Districts.*

takes place, except in giving about one-sixth less straw.

In that of *Termonde*—The *summer keep* for each cow, is nearly an English acre of clover, as soiling.

For *winter*, nearly an English acre of turnips, and one of carrots, with a very little hay and straw; perhaps five pound of hay, and ten pound of straw per diem.

The white drink, as for the horses, is regularly given.

In the district of the *Pays de Waes*—The *summer keep* for each cow is about half an English acre of clover, cut and carried to the stall.

For *winter*, nearly an English acre of turnips, one and a half of carrots, six sacks of chaff; and white water, or *soup*, as it is termed, prepared in the same manner every where, and as is described in the former Section, upon the Keep of Horses.

The precise quantity and kinds of provender given to each animal per day, have been mentioned, as to particular instances, in a former part of this Report. The present Section states the general practice of the different districts, from the best authorities. From these statements may be deduced, the inferiority of the turnip crop of Flanders to that of our countries; they furnish, however, an excellent example of

the value and feasibility of the soiling system by the means of clover. In Ireland a prejudice operates against it, from the supposed danger of the fixed air generated in the stomach of the animal thus fed. This, in the worst cases, may be remedied by the flexible tube or the trochar*, but may better be prevented, as in Flanders, by giving the clover in small quantities at a time, and always from that which has been cut at least four-and-twenty hours, that the fixed air contained in the stalk of the clover, may have time to evaporate.

If this excellent Flemish practice of soiling upon clover, with that of saving their own clover seed, could be established in Ireland, the benefit to the farmer of every class, would be incalculable.

The manner of feeding *sheep*, in Flanders, is the same throughout, and has been already detailed. That of feeding *swine*, has also been particularized.

With respect to *calves*, those to be reared for a succession, have very little new milk, and for

* The flexible tube forces back the leafy matter which the generation of the fixed air has pressed against the orifice of the stomach, and lets the air escape, which would otherwise expand, to the destruction of the animal. The trochar, a surgical instrument, inserted between the hip and short rib, produces the same effect.

a very short time, averaging, perhaps, two quarts a day for a month; they are then reduced to butter-milk and water, and have the refuse of the cows' diet, with a portion of their drink, and a little hay.

Those intended for the butcher, as veal, are uniformly kept upon their legs in narrow boarded stalls; they are bled, as is usual with us; are kept particularly clean, and fed abundantly with sweet milk fresh from the cow.

In the Pays de Waes, a peculiar attention is given to this branch of rural economy; and, besides the usual routine, they give them once in the day a mixture of new milk, eggs, and white bread, carefully beaten up and blended. The veal is uncommonly fine and white, and is ready for market after six or eight weeks' feeding.

It may be expected that something should be said upon the subject of dairies, but it has been already remarked, that they do not prevail in Flanders on any considerable scale: the chief points respecting them, as to the management of the cows, and produce of milk and butter, have been already mentioned.

Had time and circumstances permitted, the Author of this Report would have gladly extended his tour to Holland for the purpose of this inquiry. He endeavoured to obtain useful information through a friend, who had connections there, but

did not succeed. The proprietors of dairies in that country, have for the most part an insurmountable objection to communicate the detail of a business in which they have attained a character for superiority, which they wish to preserve; little can be done, except by residence, and personal inspection.

Mr. Quarles d'Ufford, Secretary of the Commission of Agriculture in South Holland, interested himself most politely, in endeavouring to procure some information upon the subject, and transmitted from the President of the Commission, some answers to queries put by Sir John Sinclair, who visited the dairy of that gentleman. As Sir John has not noticed them, in his interesting publication, it may be well to let such of them appear here, as relate to the transactions of the dairy.

SECT. IV,

The Answers of Mr. Van de Poes, President of the Commission of Agriculture in South Holland, to Questions of the Right Honourable Sir John Sinclair, Bart. respecting the Dairy of Mr. Van de Poes.

Q. 1st, The number of cows?

A. Sixty-four of all ages.

Q. 2d, How is the milk disposed of? in making butter? or cheese? or feeding veal?

A. The total produce of the milk is sold wholesale, and being carried to the Hague in copper vessels, immediately after the cows are milked, is retailed there by the purchasers.

Q. 3d, What is the most profitable management?

A. For those within reach of great towns, the most profitable mode is to sell the milk;—but for those at a distance, the making of butter and cheese is more productive.

Q. 4th, What quantity of milk is given by one cow, by the day, the week, the month, the year, upon an average of twenty cows?

A. Forty cows well fed, and well taken care of, may give from 200 to 250 pints of milk* by the day, during the entire year.

According to the calculation of the Commission of Agriculture of the Province of South Holland, one good cow produces 78 pounds of butter, and 180 pounds of cheese, in the six summer months.

* This, on an average of the Flemish pints, of different districts, would be 121 quarts English per day, which, from forty cows, would be but about three quarts from each cow. This, even for the year round, seems but a very trifling produce. The Reporter is not aware whether there is any difference between the pint of Flanders and that of the Hague.

Q. 5th, How are the cows fed in summer and in winter?

A. In summer they feed in the pastures day and night: in winter, they are fed with hay, turnips, carrots, grains from the breweries, cakes of lintseed, bean-meal, &c. &c.

Q. 6th, What is the best age for a bull, and why?

A. A bull well kept, well fed from a calf, and of good blood, is fit to serve cows generally at one and a half, or two years old; and this is considered the best age, as those more advanced are heavy and wicked. The cow served by an aged bull is more likely to miss being in calf; and, if impregnated, is more liable to suffer inconvenience with respect to the foetus.

Q. 7th, At what age are the bulls sold or dismissed?

A. At the age of two, or two and a half years, they are replaced by younger bulls.

Q. 8th, Is it an advantage that the tails of the cows should be tied by a cord, and raised high up? and why?

A. Cleanliness requires that their tails should be fixed in this manner, otherwise they acquire dirt, and communicate it to the milkers.

Q. 9th, How is the butter made? with the entire milk, or only with the cream?—Is it sometimes saved with sugar and saltpetre?—Is it washed?—How is the butter-milk consumed?

A. In the greatest part of Holland, they make butter of the cream only: they wash it very much, and save it with salt. There is a great demand for butter-milk—what is not sold, serves to fatten pigs, and to feed calves.

Of the skimmed-milk, they make cheese with a material called *Komynde Kaas*. In some parts of Holland, where less butter is made, they make a rich cheese with the entire milk.

Here terminate the answers of Mr. Van de Poes, which relate to the dairy. In the Island of Cad-sand, a gentleman very willing to communicate, but not versed in that kind of information, mentioned generally, his having remarked, that in the dairying districts, the best kept cow-stables, were strictly attended to in point of cleanliness and temperature. He spoke of having drank coffee with the cow-keeper in the general stable, in winter, without the annoyance of cold, of dirt, or any offensive smell.

In Flanders, they preserve in their cow-stables the temperature of the month of May.

In Mr. Roper's well-conducted establishment in Ireland, consisting of nearly two-hundred cows, the thermometer is kept at sixty degrees, and it is considered, that any variation from that temperature tends to reduce the quantity of milk.

The Reporter regrets extremely, that he had not the opportunity of detailing from personal

inspection, the practice of the chief dairies in Holland.

At the close of the questions above-mentioned, Sir John Sinclair has added one respecting taxation, which shall be stated in the next Section.

SECT. V.

Taxes.

THE question put to Mr. Van de Poes by Sir John Sinclair, upon this subject, is as follows :

Q. " What taxes are paid, or chargeable upon the land, the cattle, the house, and the servants of a proprietor or farmer?—Are there any taxes on labourers in agriculture?"

A. The land-tax (*contribution fonciere*) is calculated at about 30 or 40 per cent. of the taxable revenue.—That upon houses is calculated at a fourth part of the sum for which they can be let. Upon cattle they pay one or two sous per beast, according to the age. This serves as a fund for the Commissions of Agriculture.—For farm-servants they pay nothing, when they do not reside in the house of the proprietor.

Labourers in agriculture are entirely exempt from taxes.

The rates of labour, of rent, and taxes, in Flanders, have been occasionally mentioned in the course of this Report. It may be satisfactory to state, from a document in the Bureau of the Governor of Western Flanders, the mode by which they were calculated in the department de la Lys, before the expiration of the French government.

	Hectares.	Ares.
Total hectares in the department	302,235	28
National Woods not taxable	5718	17
Net taxable hectares	296,517	11

These being of divers qualities, when valued at an average of 33 centimes per are*, furnish a net revenue taxable of 9,788,364 francs; and 70,794 houses, at the average value of 24 francs, 45 cents. 3-10ths, give 1,744,099 francs.

Total revenue (net) taxable 11,532,463 francs.

The land-tax (*contribution fonciere*) was 3,300,000 francs, which was three-tenths of the revenue; but by the addition of 24 centimes for expences of various sorts, the amount became 4,092,000 francs, or more than one-third of the revenue.

The personal tax (*contribution personnelle*), and the furniture tax (*contribution mobiliare*), were fixed at 517,500 francs, which, divided

* This would be, by the English acre, about 11s.

amongst 461,659 inhabitants, is for each, about one franc 13 cents.

This department consists of four districts :

1st, Bruges, comprising	77 Communes,	149,161 souls.
2d, Furnes,	ditto 60 ditto	51,573 ditto.
3d, Ypres,	ditto 46 ditto	101,738 ditto.
4th, Courtray,	ditto 67 ditto	159,187 ditto.

Total population, 461,659

This number upon 302,235 hectares, which are equal to 746,521 English acres, would be about five souls to eight English acres.

The population is much more dense in other districts ; in that of Bruges alone, at the rate of three souls to four acres, and in that of Courtray, at the rate of one to an English acre. Notwithstanding this, one-third of the produce of the land is annually exported, than which, no circumstance can better mark the skill, the industry, and frugality of the Flemish farmer.

Mr. Quarles d'Ufford, in transmitting the foregoing answers of Mr. Van de Poes, was also obliging enough to communicate some information relative to the culture of Madder, which shall be noticed in the following Section.

SECT. VI.

Culture of Madder.

THE land intended for the cultivation of mad-
der, should be of good quality, as this plant re-
quires a strong soil and abundance of manure.

At the end of April or May, according as the
young plants are large enough to be transplanted,
the land must be ploughed in beds of two feet,
or two feet and a half wide, in the same manner
as is done for the cultivation of tobacco; the beds
are then to be harrowed and raked, and the
young suckers of the roots or plants are to be put
down in rows, at intervals of a foot or a foot and
a half, and at six or eight inches distance in the
row.

During the entire summer, the land should
be frequently stirred, and kept free from weeds.

In the month of November, when the leaves
are faded, the plants are covered with two inches
of earth, by a plough having the point of the
coulter a little raised or rounded, so as not to
injure the young plants.

In the following spring, when the young shoots
are four or five inches long, they are gathered
or torn off, and planted in new beds, in the same
manner as has been pointed out above; and
then in the month of September or October, after

the faded leaves have been removed, the old roots are taken up.

The madder thus taken up, should be deposited under cover, to protect it from the rain ; and after ten or twelve days, it should be placed in an oven moderately heated. When it is sufficiently dried, it is gently beaten with a flail, to get rid of any clay that may adhere to the plants ; and by means of a small windmill, it is ground and sifted, to separate it from any remaining earth or dirt.

It is then replaced in the oven for a short time, and when taken out, is spread upon a hair-cloth to cool ; after which it is ground and cleaned once more. It is then carried to a bruising-mill, and reduced to a fine powder, and is packed in casks or barrels for market.

So far the information communicated by Mr. d'Ufford extends. A treatise upon the same subject, very much in detail, is given in the Appendix*.

The culture of woad, though not general, has been practised in Flanders. It was an object with the French government to spread the cultivation of it, and a considerable quantity of seed was sent gratis into the country for that purpose. A treatise upon its management, was presented to the Agricultural Society of Bruges ; the trans-

* Appendix, No. IV.

lation of which, with that of another Essay on the Preparation of Indigo, appears in the Appendix*.

The possibility of cultivating this plant in England has been ascertained†. It is also grown and manufactured in a clumsy manner in more than one part of Ireland, and with considerable profit, but on a very small scale. As green food merely, the experiment might be worth making. Sheep like the plant, but it is thought that cattle do not. Mangel-wurzel, which becomes a favourite food with cattle, is at first rejected by them: it might happen to be so with woad; and that by perseverance, it would come to be relished; if so, it might be made to furnish an unceasing supply of green fodder, as it is in a state of vegetation at all seasons of the year, except during a temporary check by the severity of the frost, or by the harsh winds of the month of March.

SECT. VII.

Analysis of Soils.

HAVING mentioned the general quality of the soils of the different Divisions, respectively, it

* Appendix, No. V.

† Vide Young's Lincolnshire Report.

may be satisfactory that an analysis of at least one specimen from each should be given.

A vast number were collected in the course of the author's investigation, which lie for inspection in the Board-room of the Farming Society of Ireland; but, to multiply the numbers of the analysis, by a statement of minute shades of difference, would have been as laborious to the chymist as irksome to the reader. Suffice it to say, that with very little exception, Division No. 1, comprises all the strong soil of the Provinces of Eastern and Western Flanders; and even in this, a considerable proportion of sand appears. In all the others, it is the prominent ingredient of the soil; exhibiting a lesser degree of fertility where the ancient downs or banks existed, and a richer combination in the lower situations, where the overflow of rivers occasionally deposited their sediment.

The general prevalence of the sand will appear from the following table:

Division No. 1.—Wheat soil, St. Catherine's Polder, near Ostend.

Alumine	52½
Silex	21
Carbonate of lime	19
Oxide of iron	7½
<hr/>	
100 grains.	
<hr/>	

Division No. 2.—Turnip soil, at Vlamertynge

Silex	76
Alumine	18
Carbonate of lime	4
Oxide of iron	2
	<hr/>
	100 grains.

Division No. 3.—Rye soil, east of Menin.

Silex	168
Alumine	28
Oxide of iron	4
	<hr/>
	200 grains.

Division No. 4.—Wheat soil, Sweveghem.

Silex	126½
Alumine	70
Oxide of iron	1½
Carbonate of lime	1
Vegetable fibres	1
	<hr/>
	200 grains.

Division No. 5.—Potatoo soil, between Iseghem and Hulst.

Silex	65½
Alumine	32½
Oxide of iron	2
	<hr/>
	100 grains.

Division No. 6.—Rye soil, near Cortemarck.

Silex	91
Alumine	8
Oxide of iron	1
	<hr/>
	100 grains.

Division No. 7.—Rye soil, Gheluvelt.

Silex	81½
Alumine	15
Oxide of iron	3
	<hr/>
	100 grains.

Division No. 8.—Wheat soil, near Gistel.

Silex	71
Alumine	26½
Oxide of iron	2
Lime	½
	<hr/>
	100 grains.

Division No. 9.—Rye soil, Laetem.

Silex	180
Alumine	18½
Oxide of iron	1½
	<hr/>
	200 grains.

Division No. 10.—Oat soil, Oustzeele.

Silex	49
Alumine	48½
Oxide of iron	2½
	<hr/>
	100 grains.

Division No. 11.—Carrot soil, second crop after wheat,
near St. Nicolas.

Silex	84
Alumine	13
Oxide of iron	3
	<hr/>
	100 grains.

Specimen of the Schorres of Cadsand, not yet em-
banked from the sea.

Alumine	57½
Carbonate of lime	21½
Silex	15½
Oxide of iron	5½
	<hr/>
	100 grains.

It may be generally useful to add to this table, the analysis of Dutch ashes, made by Professor Brande, of the Royal Institution, and published by Sir John Sinclair.

The extraordinary benefit which the clover crops of Flanders derive from the application of this manure, makes it an object to have the component parts universally known, in the hope that ashes of similar efficacy may be, by these means, discovered in other situations.

Analysis of Dutch Ashes.

Siliceous earth	32
Sulphate of lime	12
Sulphate and muriate of soda	6
Carbonate of lime	40
Oxide of iron	3
	<hr/>
	93
Impurities and loss	7
	<hr/>
	100 grains.
	<hr/>

CONCLUSION.

*To the Directors of the Farming Society of
Ireland.*

MY LORDS, AND GENTLEMEN,

WHEN you desired that I should examine into, and report on the Agriculture of Flanders, you employed me in a favourite pursuit, and gratified me, by an opportunity of testifying my prompt and cheerful compliance with your commands.

If in my progress, greater difficulties occurred than were at first expected, be assured, that my zeal and exertions were proportionably increased.

To obtain correct information in a foreign country, where the persons chiefly occupied in rural affairs, were in general unacquainted with the French language as a medium of communication, was a task not easily to be accomplished.

The varieties of weights and measures, also differing from each other, even in adjoining districts, and all differing from those of France, created daily obstacles, and were the cause of much impediment and delay. Perseverance,

however, in a great measure, surmounted those obstructions, and I am now enabled to present to you the result of the Commission with which I have been honoured.

That your Society, which has already accomplished so much for the improvement of Ireland, should be attracted by the rumour, and induced to ascertain the particulars of Flemish Agriculture, is not surprising. It will probably become interesting to every nation desirous of increasing the products of its soil, and of acquiring abundant provision for an overflowing population.

Your directions to me, were, not to limit my Report to objects merely applicable to Ireland, but to include whatever might be supposed acceptable to the sister country.

I have indulged my own inclination, whilst I obeyed your instructions ; and in presenting facts of Flemish produce, have sought to make them intelligible in England, Scotland, and Ireland, respectively.

The respectability of a Commission under the Charter Seal of your Society, made all private introduction unnecessary, and acted as a passport to services, from gentlemen with whose names it is my duty to make you acquainted ; whilst gratitude calls upon me to acknowledge their attentions. Suffer me then to introduce to you those, who, from respect for a great Agri-

cultural Society, were eminently useful in obtaining for your humble representative, the information you sent him to procure.

His Excellency the Baron de Coeninck, Minister of the Interior, &c. &c. then Governor of Eastern Flanders, to whom I was indebted for a circular letter to the Mayors of all the Communes in the Province over which he presided, and for the most accurate information respecting that interesting part of it, entitled the Pays de Waes.

His Excellency the Baron de Loen, Chamberlain of the King, &c. &c. Governor of Western Flanders, by whose politeness I was suffered to peruse, in the Bureau of the Government, all that related to the Agriculture of that Province.

The Baron de Serret, a scientific and practical Agriculturist, who was always ready to communicate information strictly to be relied on, and of which I have taken abundant advantage.

Monsieur Auguste Wieland, who kindly took the trouble to accompany me on a tour, and in addition to other useful information, made me acquainted with his incomparable method of reclaiming wet land.

Monsieur de Cleir, who was good enough to accompany me in a long journey on horseback, and to point out many interesting circumstances, not only upon his own estate, but in the line of country through which we passed.

The Baron de Vonzeulen, who, in the vicinity of his own property, introduced me to some extensive farmers.

Mons. Herwyn, the spirited improver of the Great Moor. Monsieur Iwiens, who took infinite pains, not only in pointing out the farming circumstances of the neighbourhood of Courtray, but in procuring me the best information respecting that district.

The Chevalier de Piquet, formerly Prefect of Courtray. Monsieur Lippens, to whom I am indebted for the most satisfactory answers to numerous questions, with which I took the liberty to trouble him. Monsieur de Risseux, and Monsieur Caellinfels, who were obliging enough to accompany me in Cadsand, and to furnish me with a variety of accurate information.

Monsieur Mayeur, Monsieur Quarles d'Ufford, Monsieur Delbecq, and Monsieur Siegle; and let me not forget the hospitality and attention of Mr. Siveright, and Major-General Cope, of Ostend, who, though not engaged themselves in agricultural pursuits, took an active interest in all that related to mine, and were good enough to procure me the assistance of those from whose information I derived considerable advantage. To enumerate all to whom I feel myself obliged, would be impossible.

Whether I have profited by the information I

received, and whether I have exerted my own judgment with effect, is for you, Gentlemen, and the Public, to decide. I have stated facts as I believe them to exist, having satisfied, in most cases, both the eye and ear, as to their probability. I have heard of an enormous produce which I never found to be realized ; and, though in some particular instances great returns have been ascertained, yet by every thing I could collect from the best authorities, the average I have given is fairly stated ; and, considering the nature of the soil, that average will appear to be a very high one.

It was my duty to examine accurately, to inquire carefully, and to state my sentiments correctly : my opinion of the turnip crop may not be palatable to the Flemish farmer, should this Report happen to fall into his hands ; let him, however, look to England and Scotland, or even to Ireland, for the means of improvement in this respect ; and, whilst his own country imparts many instances of valuable practice, let him not object to derive from these, that most essential art, of which he appears at present to be ignorant.

I may have omitted much, and been guilty of many errors ; but even so, you will have served the cause of Agriculture, by having elicited information, which may lead others to a more

minute investigation of this important subject.
If I have failed, the fault rests with me ; if I have
succeeded, the merit is yours.

I have the Honour to remain,

MY LORDS, AND GENTLEMEN,

With great respect,

Your obliged and faithful

Humble Servant,

THOMAS RADCLIFF.

APPENDIX.

No. I.

French Metrical System.

SECT. I.

Linear Measure.

THE metre which is adopted by the French as the unit of length, and from which all other measures are derived, is the ten millionth part of a quadrant of the terrestrial meridian, or distance from the Equator to the Pole, computed by measuring an *arc* between the parallels of Dunkirk and Barcelona.

This quadrant was found to be 5130740 French toises of six French feet each, (*Pieds de Roi*), which therefore being multiplied by 6 and by 12, and divided by 10,000,000, will give 36,9413280 French inches, or 443,296 French lines which constitute the metre. This, in French feet, will be 3.078444, or 3 feet eleven lines and 296 *millièmes**.

By the scale of Messrs. Dollond and Co. London, 11 inches $3\frac{1}{4}$ lines of the French *Pied de Roi*, which are equal to 135.25 French lines, are equal to 12 inches English. Of course, as

* This was decreed by the Legislative Body of France in 1795, upon the Report of the National Institute of Sciences, by whose labours the error which prevailed in the provisional metre, and which pervaded all the former calculations, was set right. Of the provisional metre the fraction was 442 *millièmes*; by that now established it is 296. This metre, engraved on the platina scale, is preserved in the National Institute.

288 APPENDIX.—*French Metrical System.*

135.25 French lines are to 12 English inches, so will be 443.296 French lines, or 3.0784 French feet (which constitute the metre), to 39.3310 English inches, or 3.2775 English feet.

But by a comparison between the French metre and the English standard yard, made with great accuracy by Professor Pictet, of Geneva, in temperature 55, the excess of the metre was found to be 3.3828 English inches; and this, though the difference is not very material, seems to be the best standard to adopt. By this,

	<i>French Inches.</i>	<i>English Inches.</i>
The metre =	36.9413	= 39.3828
Or in	<i>French Feet.</i>	<i>English Feet.</i>
	3.0784	3.2819

The comparative ascending scale for linear measure will be as follows:

<i>Nomenclature of the French System.</i>	<i>French Feet, (Pieds de Roi).</i>	<i>English Feet.</i>
Metre contains	3.078444 ..	3.281900
Decametre	30.78444 ..	32.81900
Hectometre	307.8444 ..	328.1900
Kilometre	3078.444 ..	3281.900
Myriametre	30784.44 ..	32819.00
Degree centesimal ..	307844.4 ..	328190.0
Distance from the Equator to the Pole }	30784440. ..	32819000.

The comparative descending scale for linear measure will be thus:

<i>Nomenclature of the French System.</i>	<i>French Inches.</i>	<i>English Inches.</i>
Metre	36.941328	39.3828
Decimetre	3.6941328	3.93828
Centimetre ....	.36941328 ....	.393828
Millemetre ....	.036941328 ....	.0393828

	<i>French Lines.</i>		<i>English Lines.</i>
Metre	443.296	..	472.5936
Decimetre	44.3296	..	47.25936
Centimetre	4.43296	..	4.725936
Millimetre .....	.443296	..	.4725936

SECT. II.

Superficial Measure.

Now, as the metre is the element of linear, so is the are which arises from it, the element of superficial measure.—The are, or square decametre, comprises 100 square metres.—The square metre is equal to 9.4768 French, and to 10.7708 English feet.—The are is therefore equal to 947.6817 French, and to 1077.0867 English feet.

In superficial measure, the comparative ascending scale is as follows :

<i>Nomenclature of the French System.</i>	<i>French Square Feet, (Pieds de Roi).</i>	<i>English Square Feet.</i>
Are (square decametre)	947.6817 ..	1077.0867
Decare	9476.817 ..	10770.867
Hectare	94768.17 ..	107708.67
Kilare	947681.7 ..	1077086.7
Myriare	9476817. ..	10770867.

The comparative descending scale is thus :

<i>Nomenclature of the French System.</i>	<i>French Square Feet.</i>	<i>English Square Feet.</i>
Are	947.6817	1077.0867
Deciare	94.76817	107.70867
Centiare	9.476817	10.770867

	<i>French Square Inches.</i>	<i>English Square Inches.</i>
In inches	136.46617	155.10049
Square decimetre	13.646617	15.510049
Square centimetre	1.3646617	1.5510049
Square millimetre .....	.13646617	.15510049

	<i>French Square Lines.</i>	<i>English Square Lines.</i>
Square metre in lines ..	1965.1134	2233.4471
Square decimetre	196.51134	223.34471
Square centimetre	19.651134	22.334471
Square millimetre	1.9651134	2.2334471

This scale of superficial measure, which springs also from the metre, is applicable to land-measure, for which purpose the following rule may prove a satisfactory guide.

Reduce the given measure by which land is let in any district, into some of the foregoing decimal denominations, by a comparison with the column of French feet, inches, &c. and thence by that of English feet, &c. into English, Scotch, or Irish acres, thus:

If one *maet* or *mesure** of Bruges contain, as is the case, 44

* The other denominations by which land is let in other districts, viz. the *bonnier*, the *arpent*, &c. may be reduced in like manner.

The *arpent* contains 48291.8148 English feet.

1 arpent { = 1.1086 English statute acre.
 { = 0.8723 Scotch Cunningham acre.
 { = 0.6844 Irish plantation acre.

The *hectare* contains 107708.67 English feet.

1 hectare { = 2.4726 English statute acre.
 { = 1.9456 Scotch Cunningham acre.
 { = 1.5264 Irish plantation acre.

The *bonnier* contains 152623.1854 English feet.

1 bonnier { = 3.5037 English statute acre.
 { = 2.757 Scotch Cunningham acre.
 { = 2.163 Irish plantation acre.

Tables of Reduction are sold in the chief towns, by which the Flemish weights and measures are equalized with those of the metrical system of France.

ares 23.68 centiares, what proportion will it bear to an English, Scotch, and Irish acre?

By the foregoing scale it appears, that one are contains 1077.0867 English feet, and one centiare 10.770867; the first of these being multiplied by 44, and the latter by 23.68, will give the number of English square feet in a *mésure* of Bruges, viz.

		<i>English Square Feet.</i>
The <i>mesure</i> of Bruges	=	47646.8682
The English statute acre	=	43560.
The Scotch (Cunningham) acre	=	55357½.
The Irish (plantation) acre	=	70560.

Thus, by reducing each to English feet, the proportions can be accurately ascertained by the rule of three, thus:

<i>English Feet.</i>	<i>Measure of Bruges.</i>	<i>English Feet.</i>	<i>Proportions.</i>
As 47646.8682	: 1	:: 43560	.. 0.9142 of English acre.
		:: 55357.5	.. 1.0611 of Scotch ditto.
		:: 70560	.. 1.1635 of Irish ditto.

The foregoing proportions are those of the different acres to the *mesure* of Bruges, and *vice versa*, the *mésure* of Bruges is equal to 1.0938 English acre.

0.94235 of the Scotch acre.

0.8594 of the Irish acre.

SECT. III.

Measures of Capacity.

FROM the same origin are derived also the measures of capacity, and the litre, which is the cubic decimetre, becomes the element of such measures, both dry and liquid.

	<i>French Inches.</i>	<i>English Inches.</i>
Metre	36.941328	.... 39.3828
Decimetre	3.6941328	.... 3.93828
Square decimetre	13.6466171	.... 15.510049

	<i>French Cubic Inches.</i>		<i>English Cubic Inches.</i>
Cubic decimetre, or litre	50.412416	....	61.082905

From this point the comparative ascending scale is as follows:

	<i>French Cubic Inches.</i>		<i>English Cubic Inches.</i>
Litre	50.412416	....	61.082915
Decalitre	504.12416	....	610.82915
Hectolitre	5041.2416	....	6108.2915
Kilolitre	50412.416	....	61082.915
Myrialitre	504124.16	....	610829.15

	<i>French Cubic Feet.</i>		<i>English Cubic Feet.</i>
Hectolitre	2.91738519	....	3.5349666
Kilolitre	29.1738519	....	35.349666
Myrialitre	291.738519	....	353.49666

The descending scale is thus:

	<i>French Cubic Inches.</i>		<i>English Cubic Inches.</i>
Litre	50.412416	....	61.082955
Decilitre	5.0412416	....	6.1082915
Centilitre .....	.50412416	....	.61082915

	<i>French Cubic Lines.</i>		<i>English Cubic Lines.</i>
Litre	87112.6548	....	105551.28
Decilitre	8711.26548	....	10555.128
Centilitre	871.126548	....	1055.5128

This scale, which springs also from the metre, is applicable to measures of capacity of the different countries by the following method.

Reduce the given measure of the district into the French cubic inches or feet, contained among the foregoing decimal denominations, and from thence by the English column into English cubic inches or feet, thus:

If 1 hoet of Bruges contain, as is the case, 1 hectolitre 7 decalitres and 2 litres, what will its contents be in Winchester bushels?

By the foregoing scale it appears, that 1 hectolitre 7 decalitres and 2 litres, contain 10506.26138 English cubical inches, which sum, divided by 2150.42 (the number of cubical inches in a Winchester bushel), will give the contents of the hoet in Winchester bushels, viz. 4.8856 Winchester.

SECT. IV.

Weights.

FROM the same elemental metre arise also the gradations of weight; for though weight would seem to have but a very distant reference to measures of length, yet it is to be observed, that as the measures of capacity, in the former scale, are derived from the metre, and that the litre is a measure of capacity equal to the decimetre cube, whose contents of pure water are by weight 1000 grammes, or 1 kilogramme, the millimetre cube, which comprises one gramme, becomes the basis of all weights. As, in France, the litre or decimetre cube has been found to contain 1000 grammes, so in England has the cubic foot of pure water been found to weigh 1000 ounces avoirdupois: therefore, as the litre is to the foot, so will the gramme be to the ounce; and as the litre, which contains 61.082915 cubic inches, is $\frac{1}{28.2896}$ of the cubic foot, which contains 1728 cubic inches; so is the gramme $\frac{1}{28.2896}$ of the ounce avoirdupois; and if $\frac{1}{28.2896}$ of the ounce, it is the $\frac{1}{0.56558}$ of the drachm.

<i>Nomenclature.</i>	<i>Drachms avoirdupois.</i>	<i>Ounces avoirdupois.</i>	<i>Pounds avoirdupois.</i>
Gramme .....	.56558		
Decigramme	5.6558		
Hectagramme	56.558	3.53487	
Kilogramme	565.58	35.3487	2.2093
Myriagramme	5655.8	353.487	22.093

Bar or cubic measure of water. } 565580. 35348.7 .. 2209.8

Descending Scale.

	<i>Drachms avoirdupois.</i>		<i>Scruples.</i>		<i>Grains.</i>
Gramme ....	.56558	..	1.6967	..	16.967
Decigramme ..	.056558	..	.16967	..	1.6967
Centigramme	.0056558	..	.016967	..	.16967
Millegramme	.00056558	..	.0016967	..	.016967

This Scale then, which springs also from the same metre, is applicable to the comparative estimate of weights as follows:

Reduce the given weight of the district into the French weight contained in some of the foregoing decimal denominations, and from thence by the English column, into English avoirdupois weight, thus:

If 10lb. of Bruges contain, as is the case, four kilogrammes, six hectogrammes three decagrammes, and nine grammes, the proportion to 10lb. avoirdupois will be found by multiplying the first of these denominations by 4, the second by 6, and the third by 9, according to their value in the foregoing columns.—The product will be, 10.24266lbs. avoirdupois.

SECT. V.

French Metrical System not yet perfect.

THUS, as far as agriculture is connected with it, the Reporter has endeavoured to explain the nature of the French

system, and the mode of applying it, in the comparison of weights and measures: a system beautiful in its theory as extensive in its design; multiplying or dividing *ad infinitum*, by the mere removal of the decimal point to the left or to the right; embracing all objects, equalizing all measures, and all weights, and referring all to one fixed and invariable standard! With such features and such qualifications, who would not have expected it to spread into universal acceptance? But with all this imposing outline of perfection, it is still imperfect: its inventors have found it so, and have been obliged to sacrifice to the public wish, what appeared to be its most striking advantages.

Even the peremptory and decisive measures of Buonaparte were inefficient to establish it in general use; and the Government in 1812, preserving as much of the principle as they could, found it necessary to concede the nomenclature and decimal division, and to permit a subdivision of both weights and measures, not by decimals, but into all the ancient gradations of the original Toise and Poids de marc: reserving to themselves ten years from the foregoing date, to decide upon; and to publish, the results that experience shall within that time have furnished, as to the improvements of which the system of weights and measures may be susceptible.

SECT. VI.

Great Caution necessary in making a general Change of Weights and Measures.

THE foregoing circumstances furnish a strong instance of the difficulty of effecting a total change in ancient and confirmed customs, so minutely pervading almost all the transactions of life, and prove the wisdom of the British Legislature, in not suffering itself to be hurried into a change of

system, there, without the most cautious deliberation. Scotland, with its own peculiar perseverance and ability, has suggested the features of alteration, which the Committee of the House of Commons has recommended in the Bill now before Parliament, and of which the most obviously striking is, the change from the troy to the present avoirdupois pound, strongly supported not only by the circumstance of being referable to invariable standards of measure and of weight, but as connecting both at a given point by a fortuitous coincidence*.

This coincidence being also favourable to the arrangement of measures of capacity, it is recommended by the Committee, that an alteration in these shall take place, by which fractions in the weight may be avoided; and that all liquids be sold by weight instead of gauging†.

It is intended, however, that corn shall continue to be sold by measure; chiefly, it is thought, from the apprehension of too great an interference with established habits. The same objection to an alteration in this particular, is admitted by the Committee of the House of Commons in 1758; and the

* The specific gravity of pure water has been found to be invariable at the same temperature, and the cubic foot of pure water at the temperature of $56\frac{1}{2}^{\circ}$ by Fahrenheit's Thermometer, has been ascertained to weigh exactly 1000 ounces avoirdupois.—1 cubic foot = 1728 cubic inches; therefore 27.648 cubic inches = 1 lb. avoirdupois.

† At present, a great variety of bushels exists, and though the Winchester bushel is the only legal one, yet even of Winchesters there are three varieties (as the Committee of Glasgow have judiciously pointed out), all legalized at different times by different Acts of Parliament.

By the new Bill, all former bushels are to be abolished, and one substituted in their room, containing

.....	2211.84	Cubic Inches	=	80 lbs. avoirdupois.
The gallon	276.48	ditto.	=	10 ditto.
The quart	69.12	ditto.	=	40 ounces avoirdupois.
The pint	34.56	ditto.	=	20 ditto.
The $\frac{1}{2}$ pint ...	17.28	ditto.	=	10 ditto.

Committee of 1814 has, no doubt, grounded its suggestion upon deep and satisfactory foundation; but were there no insurmountable difficulties in the way, it would seem still more suitable that *corn* should be sold by weight, than *liquids*. If there were, indeed, at present, but one description of Winchester bushel, and that, like the avoirdupois pound, it chanced to be recognized as the new standard, there might be an adequate reason for adhering to popular and ancient habit; but where there are, in fact, three Winchester bushels, each purporting to be a legal standard, and that the bushel to be adopted under the Bill is to differ from all of these, in its capacity, the confusion thus created might perhaps best be remedied with respect to corn, by resorting to a standard of weight, a practice to be supported, not only by the precedent of the great commercial town of Liverpool, but by the universal usage of Ireland; where (whatever may be the variety of measures, and their denominations), all corn is sold by weight. This circumstance may have caused that country not to have been included in the Bill; and it is this which has now produced these observations, in the hope that, should any change take place in the weights and measures of Ireland, the general and approved practice of selling corn by weight, may nevertheless remain unaffected by it.

Though the conclusion of this may be considered as irrelevant to a Report upon the Agriculture of Flanders, the former part, it is hoped, will be thought satisfactory, as a key to the comparative estimate of its produce with that of other countries.

As very different opinions have been formed upon this point, the Reporter has conceived it his duty not only to satisfy his own mind upon the subject, by a minute, rather than a rough, or hurried calculation, but to smooth the way also, as much as possible, for any agriculturist who may follow him, either by inspection or inquiry.

No. II.

Form of Leases in Flanders.

THE customary Clauses in Leases and Agreements between the Proprietors of Lands and those to whom they confide the cultivation of them, are,

That the farmer must abide by the farm and buildings thereunto belonging, with its extent in manor, pasturage, arable land, meadows and copses, of hectares are centiares, or thereabouts, be the same more or less. The surplus or deficiency in extent, if there be any, is to his profit or loss, and he must promise and bind himself to accomplish and execute the articles which follow, without claiming any indemnity, or the smallest reduction of rent, and under penalty of the loss of his interest in the land.

1st, To pay and discharge the contribution fonciere*, also that laid on doors and windows, and all other imposts as well ordinary as extraordinary, foreseen and unforeseen, all and every one with which the farm and lands are or shall be charged during the continuance of the lease, as well as those which, during the said period, are or shall be imposed on the lessor, by the laws at present existing, or which may exist hereafter, such as the subsidy for war, and all others of every denomination whatsoever; to the benefit of which laws to the lessee he hereby agrees to quit claim.

2nd, To repair, and in cases where the law demands it, to widen the roads, and for this purpose to plant hedges, as well as to cleanse the ditches and rivulets; to free from caterpillars at the usual time, all the woods which are included in his lease, and to be subject to the penalties which, for these causes, may be imposed.

3rd, To inhabit the buildings of the farm together with his family, to furnish them, and keep them stored with goods.

* Land Tax.

effects, cattle, and all things which are necessary for his cultivation of the farm, to provide carpenter's-work, thatch, and all other local repairs expressed in the Code Napoleon: as to the roofs of the farm buildings, the tenant takes them at a valuation specified in francs and centimes, in order to avail himself at his going out of a new valuation in case of improvements made, or to be subject to a drawback in case of neglect. And if through neglect of repairing the roofs, the buildings should suffer any damage, the lessee is bound to pay to the lessor the double of the loss (with interest,) which may result from said neglect, according to the opinion of viewers to be named by the latter alone, at the sole cost of the lessee.

4th, To be liable to the gross repairs which the above-mentioned buildings shall have to undergo, during the continuance of the lease.

5th, To feed the workmen whom the lessor shall employ to make the repairs in said buildings; to carry and draw with his horses and carts, to the places pointed out by the lessor, all the materials which shall be necessary.

6th, To keep in good repair, the existing fences on the farm.

7th, To suffer all the high growing trees to remain for the benefit of the lessor.

8th, To preserve within their palings during the continuance of the lease, such trees as are already planted on the land, and those which the lessor shall cause to be planted; and to take care that no injury shall happen to any of them.

9th, To consent that the lessor shall cause to be cut down, planted, and rooted up, at all times upon the lands of the farm, all such trees as he shall please.

10th, To suffer two or three of the best grown trees by the arpent, to remain as reserves at the time of the cutting; to attend to the woods after each cutting, in disengaging the roots of the grass which grow around, in removing the mud from the ditches, in placing this mud and grass in a heap, and in

spreading every year throughout the wood, these heaps of rotted grass, of sod, and of mud.

11th, To pay their wages, and feed the pruners whom the lessor shall send, when he pleases, to lop off the branches of some trees and to plant others; in recompense for which, the lessee shall have the branches which are cut off, and no more.

12th, To watch over the preservation of the farm and lands, to give notice to the lessor in proper time, and in writing, of any encroachments which may be made upon them, under penalty of being held responsible.

13th, To be liable to all casualties.

14th, Not to make over or transfer to any person whatsoever his interest in the lease, nor to underlet the farm, either altogether or in part, without the formal and written consent of the lessor.

15th, To conform himself in the cultivation of the land to the unrepealed laws, and customs, and principally to the regulation concerning farmers going out and farmers entering upon lands situated in the Lordship of Vieu-bourg de Gand, of the 17th October, 1671*.

16th, To permit that in the last year of the lease, his successor may manure, cultivate, and sow the arable land from which the crop shall have been removed; that he may sow clover, in the proper season, in those lands in which wheat, rye, oats or flax, have been, or are intended to be sowed; that he may get in his harvest in the month of August, without having to wait for the termination of the lease, and that at its expiration the lessee shall immediately quit all the buildings of the farm.

* The reference to this document, which is too long to insert, is a proof of the antiquity of an established agricultural system in Flanders.

No. III.

New Method of Steeping Flax.

THE Inventor is Mr. J. E. D'Hont D'Arcy, Member of the Agricultural Society of Ghent.

In the year 1813, he called for a Commission of Inspection, which was granted by the Government.

The Commissioners appointed by the Prefect of the Department were, a linen merchant, a proprietor of spinning machinery, and a bleacher.

At this period the inventor conceived that a change of water was necessary, and the experiments were made accordingly. He is now of opinion that stagnant water is the most efficacious, but in every other respect his process is unchanged.

The Report of the Commissioners, in its chief points, is as follows:

“ That on the 9th of August, 1813, they repaired to the place appointed; and were informed by Mr. D'Hont D'Arcy, that the objects of his improvement were:

1st, To give a fine colour to the flax.

2nd, To be able to know precisely without a possibility of mistake, the moment the flax should be sufficiently steeped.

3d, To preserve both the strength and quality of the flax.

4th, To effect a saving of the material in scutching and hackling, of more than 10 per cent.

5th, To preserve the waters and air from infection, and the fish from being destroyed.

That they commenced their observations by inspecting the steeping pool of two rods long by one wide*, and six feet deep; taking in the water at one side, and letting it out at the other.

That this pool contained a considerable parcel of flax tied

* 28 feet by 14.

in bundles, and fixed in a vertical position, with the root of the plant towards the bottom. That it was kept in this position at the level of the water by some branches and straw, which branches were pressed by three planks of wood placed across, having at the extremities of each, stones sufficiently heavy to prevent the flax from floating on the surface.

That the flax had been in this state for one day, and that the water was already discoloured.

That on the 10th of August they saw the first water let off from the pool; that it was extremely black, but the smell less strong than that occasioned by the old method; that on the top of the water many bubbles appeared, a certain sign that the effect of the steepage was in full activity. That all the water was drawn off, and fresh water let in.

That on the 15th of August the second water was drawn off, less discoloured than the former; with a more disagreeable odour, but not so much as by the old method; that on the 17th the flax, no longer touching the transverse wood upon the surface of the water, descended naturally to the bottom, a certain indication of its being sufficiently steeped; that the water was let off, still a little discoloured, but without any disagreeable odour. That the flax was then taken out, spread upon a meadow, and handled in the usual way. That after its having remained there a fortnight, they returned and took a bundle, weighing six kilogrammes 66 grammes*. That they brought it to the house of Mr. Devos, a farmer at Heusden, near Ghent, who declared to them that he had sold to Mr. D'Hont D'Arcy, the half of a piece on the foot, equal to that which he shewed to them, and which had been steeped in his farm, according to the old routine. That they took a bundle of this flax, and adjusted it to the precise weight of the other, viz. 6 kilogrammes 66 grammes, and had both bundles broken and scutched; that the bundle of Mr. D'Hont D'Arcy yielded one kilogramme 420 grammes; that of Mr.

* About 13 lb. 6½ oz. avoirdupois.

Devos, one kilogramme 300 grammes. That therefore, upon the scutching there was a saving of 120 grammes. That then they had the two bundles hackled separately, that that of Mr. D'Hont D'Arcy, which weighed one kilogramme 420 grammes, yielded 870 grammes of flax and 420 grammes of tow, in all one kilogramme 290 grammes—waste 130 grammes; and that of Mr. Devos, which weighed one kilogramme 300 grammes, yielded 700 grammes of hackled flax, and 430 grammes of tow, in all one kilogramme 130 grammes—waste 170 grammes. That therefore the bundle of Mr. D'Hont D'Arcy having had but 130 grammes of waste, and that of Mr. Devos 170, an advantage of 40 grammes appears in favour of the new process. And as in the hackling a saving having been found of ten grammes, (the tow of Mr. D'Hont D'Arcy's parcel being but 420 grammes, and that of the other 480), the total advantage in point of material, is more than one-tenth of the quantity of flax.

That Mr. Devos was a farmer remarkable for careful steeping.—That to make further experiment of the efficacy of this new method with respect to the quality and strength of the flax, Mr. Gorwardverbeggen, one of the Commissioners, shewed them the two specimens of flax, wrought in competition in the same loom; that he had brought them to the greatest degree of fineness of which that species of flax was capable; that that of Mr. D'Hont D'Arcy had borne the trial perfectly, but that that of Mr. Devos, even at four degrees short of the fineness of the other, broke frequently; that therefore, the new process may be concluded to preserve the strength and quality of the flax. That in order to learn the result of the *bleaching*, they sent on the 20th September to Mr. Brackmen, bleacher, and one of the Commissioners, two skeins of thread, one taken from the flax of Mr. D'Hont D'Arcy, and the other from that of Mr. Devos. That both were tied together, and underwent the same bleach-

ing operations, and that in the end the advantage of the new process was manifested, in the facility of discovering that of Mr. D'Hont D'Arcy by its superior whiteness.

That specimens of all these gradations accompanied their report, of both parcels of flax, undressed, scutched, hackled, spun, raw and bleached, in each of which the superior whiteness of that from the new mode of steeping was obvious; and that they strongly recommend this method to the particular notice and protection of the Prefect."

The author of the memoir then states the difference of his process, which has been reported to differ from the common usage in four points.

1st, In placing the bundles in the steep vertically, instead of horizontally.

2ndly, In immersing the flax by means of transverse sticks, with that degree of weight annexed, which shall not push it down to the bottom, but leave it the power to descend spontaneously towards the conclusion of the steepage.

3dly, By leaving at first a space of at least half a foot between the bottom and the roots of the flax.

4thly, By renewing the water at stated intervals.

He states, that the improvement suggested was not carried into effect by the Minister to whom the report was made, because in a few months afterwards the Imperial Government ceased to exist, and Belgium was separated from France; but that during the interval he has occupied himself in such experiments as induce him to think, that by increasing the dimensions of the pools, so as to double the usual quantity of water in proportion to the quantity of flax to be steeped, the necessity of changing the water may be dispensed with, and that in fact a strong and well-regulated putrefaction is indispensable to render the flax, when dressed, silky and fine, as by these means the gum is not only decomposed, but annihilated, a perfection which cannot be obtained by a change of water.

That besides the difference of temperature towards the surface, being in proportion to the length of time the water has been in stagnation, the heads of the flax, by their vertical position, will the better acquire the necessary degree of putrefaction, whilst the interior part of the plant, which resists much less the action of the water, being gradually, according to the degree of its submersion, in a temperature proportionably weaker, is never too much rotted or damaged.

He adds in a note, that "the gum in the head of the plant has nearly one half more consistence than at the root; and that the flax-dressers always find that the heads are never sufficiently steeped, and that they cannot clean them without much trouble and a great loss of flax."

The spontaneous descent of the steeped flax, he states, to be an indication of its being nearly sufficiently rotted; since at the moment when the particles of air which the plant contains, have all escaped by the decomposition of the gum, the entire mass quits the transverse poles, and settles spontaneously at the bottom of the pool.

That at this moment it is necessary to be on the watch; to take out a handful of the flax, to dry it, and to examine the state of the gum; which trial should be repeated every six hours, for the purpose of seizing the moment when the gum is wholly got rid of, and before the filaments of the flax have begun to suffer in quality.

That when that exact point is attended to, the flax need only be spread one half of the usual time, so that the grass will not have time to cover it by its growth, or to deteriorate it by its humidity. That the spread flax should be turned in four or five days; and that finally, in lieu of a change of water, the extent of the steeping pool should be proportioned to double the mass to be steeped, by which the flax will acquire that shining and blueish whiteness which indicates a superior quality.

In another part of the Memoir, the author points out the defects of the old method thus:

“ That those who steep their flax by heaping the bundles upon each other horizontally, draw even from that one mass, two or three different colours, which affect the filaments of the flax, and as many more perhaps before the termination of the steepage, owing to the unequal operation of the temperature of the atmosphere, which acts with infinitely more force near the surface, than in the depth of the stagnant water. That the result of this irregularity is, that whilst the bundles in the middle of the mass are but sufficiently steeped, those at the top are too much so, and those at the bottom not enough. That as the steeping pools are generally filled as full as possible with flax, the colouring particles of the gum being diluted in but a little water, acquire thereby the power of rendering certain portions of the flax nearly black, blue, or red, according to their position in the mass.

“ That by this variation in the time of precise sufficiency of steepage, (which is critical), the after operations become difficult and troublesome. That thus great waste is occasioned, the quality of the flax altered, and the bleaching of the thread and the linen rendered tedious and expensive.

“ That those who steep in running waters, obtain more whiteness and better quality than from the common method of the stagnant pool. But that this mode is also defective, inasmuch as, the water circulating more at the extremities than in the middle of the mass, or the interior of the bundles, an equal putrefaction, or an equal whiteness, cannot be produced. That besides, as the gum is more viscous at the top of the plant than towards the root, it is impossible in running water to attain the proper degree of steepage with perfect precision. He concludes, that after much reflection, reading, and travelling through flax countries; after a minute inspection of Mr. Lee’s method in England, and after many

experiments made on a great scale, he flatters himself that the mode he proposes is the best."

The experiments reported, may furnish a comparative view of the waste that occurs in the manner of dressing the Flax in Flanders and elsewhere, as well as an opportunity of ascertaining, whether in that respect, and in the other advantages stated, Mr. Lee's method, and the later improvements upon it in England, be preferable to that which the Memoir recommends.

No. IV.

On the Culture and Manufacture of Madder.

[From the Magazine, or Universal Register, 1758.]

Method of Cultivating Madder in England, from Mr. Miller's Treatise.

FORMERLY a sufficient quantity was raised in England for home use and for export, but the consumption not being great, and the disputes respecting the tythe of it being frequent, it became neglected, and the Dutch took advantage, and employed much of their waste and sandy lands in its culture, so as to supply England now (1758) with madder to the amount of 180,000*l.* annually, *paid in specie.*

To encourage the re-establishment of madder culture, the Legislature have passed an Act to fix the tythe for 14 years, at 5*s.* per acre, annually; and the Society of Arts and Agriculture have offered considerable premiums. The following are the rules for managing the land, separating and planting the shoots, gathering and drying the roots, and of pounding, casking, and preparing it for sale.

308 APPENDIX.—*On the Culture of Madder.*

1st, The most suitable soil, a soft sandy loam, with two or three feet depth of earth, that the roots may run down without obstruction.

2d, The land to be well ploughed and laid up in high ridges in autumn, when the madder is intended to be planted in the spring. It should be well cleansed from couch and all other weeds.

3d, In spring, plough with the deepest furrow, and let the bottom be still deepened by the spade.

4th, Plant from the middle to the latter end of April, rake the ground well and lay it up in ridges, if disposed to be wet; if not, plant in rows at 18 inches interval upon the level.

5th, Mark out the rows with a line, and dibble in the plants at 12 inches in the row; secure them well in the ground, covering as little of the green as possible.

6th, Take the slips with as much root as possible if to be carried far; take them when they begin to bud out, pack so that they be not heated, and if withered, set them upright in water previous to planting.

7th, Plant nothing in the intervals, but as the madder grows high, turn it occasionally from side to side, earthing up the roots, at the side from which the haulm is turned. The interval must be stirred at the same time, and the straggling shoots cut off; thus the roots will be strengthened to yield a double increase.

8th, Madder should remain three years (but some gather it at two years, with less profit). The slips of the second and third years' growth are the best to plant, and should be taken in the spring, when about an inch above ground.

9th, In autumn when the haulm is withered off, earth up the rows, against the frost, and in spring hoe the intervals, and weed; attend the turning of the haulm in the summer, and dig between the rows till the season of the gathering, viz. about Michaelmas.

10th, In the third autumn, when the baulm is withered off, dig a trench along the first row of madder, three feet deep, as near to the roots as may be, to receive the earth in digging up the roots. Each digger must have three pickers to gather the roots and clear them from the earth. Lay them thin upon the ground, but free from wet; the whole ground must be dug the same depth of the first trench, that the roots may be all fairly got out; it will be the best preparative for any other crop: viz. Wheat, or garden stuff; as the same ground should not be planted again with madder in less than six years.

11th, Lying in heaps, or taking rain, will discolour, therefore the sooner the roots are carried to the drying house the better.

12th, The drying house should be defended from wet on all sides, but open to a free air. The roots should be spread on hurdles, placed at a convenient distance for that purpose, one over the other. Here they must remain till they are dry enough to rub the dirt clean off, and then they are to be removed to the *cold kiln*.

13th, The kiln for hops or malt will serve for madder, with the addition of a ventilator to preserve the colour.

14th, On the first kiln they are to be dried with a gentle heat, being carefully turned, till they are dry enough to part with their husks, which are to be threshed off on a common threshing floor, clean swept, and then packed up separately. These sell at a much cheaper rate than the inside madder, under the name of *mull*. The mull is sold for about 15s. per cwt. and usually pays the expence of drying and cleaning.

15th, When the *mull* is threshed off, the roots must be dried a second time, with a hotter fire, but great care must be taken that it be not too fierce, so as to discolour the madder, for on the brightness of the colour depends the price.

16th, The last process of the madder is pounding and

casking. As there are no pounding houses in England, any common stampers worked by wind, water, or cattle may, be made to answer.

No. V.

On the Culture of Woad, and Formation of Indigo.

THIS plant is indigenous in almost every country in Europe. The result of experiments made in various places, leaves no doubt as to the facility of extracting indigo from woad; and it has been clearly proved that this indigo, being of the same nature with that procured from America, might replace this latter with advantage and economy, even in time of peace.

All soils are not equally calculated for the culture of woad. It does not flourish in such as are of a strong, close, moist, or clayey nature; but succeeds remarkably well in gravelly and sandy lands which have sufficient depth to permit its tap-root to descend, and its lateral fibres to extend themselves. Lands that have been newly cleared* are peculiarly well adapted to it.

Whatever may be the nature of the soil in which woad may have been sown, it should never be sowed twice in succession. The ground should be allowed sufficient time to renew itself with such juices as are best suited to this plant, by taking from it one or more crops of another nature.

In October, November, or December, the ground intended for the woad should be turned up with the spade to the depth of about thirty centimetres, about twelve inches English, which operation, in the country, is called "pallesever."

* Dèfrichès, cleared—perhaps reclaimed in the general sense.—"Dèfricher, is to grub up an untilled piece of ground, to clear." This would indicate ground cleared from roots of trees; but dèfricheur is the first occupier of a piece of waste ground.

In February or March, after the frost has acted on the surface of the earth, the manure is spread over it as equally as possible—two furrows, of thirty-four centimetres* wide, are made with the plough, the whole length of the ground intended to be sown, forming between them a ridge or bed of sixty-eight centimetres†: and thus the whole surface of the field must be formed into similar beds, in order to be able to sow, weed, and gather the crop conveniently.

The sower, who carries the grain in a basket or sack, takes a handful of it, which he scatters over the bed by shaking his hand, and walking forward in the same manner that gardeners sow lettuces. All ground intended for woad should be ploughed five times, all tufts of grass and roots not thoroughly rotten, should be taken away; the harrow should be passed over it at least twice, and it should be rendered as fine as a garden bed. The seed is usually covered over with earth by the harrow.

This plant is not in general gathered until the second year‡.

Woad is sown in two other ways; either by scattering it in tolerable thickness on beds four feet wide, divided by trenches to carry off the water, or by placing the seed in two rows, as spinage is sown. It ought not to be sown in three rows, because it has been remarked that the leaves of the middle plants, not having sufficient air and nourishment, are destroyed, and give little or no return. Some seed ought to be kept in reserve to be sown in little holes, to replace that which has not sprung up. The woad ought to be sown pretty thickly, all the seed not taking effect, and some of the plants being frequently devoured the very moment they appear, by a little insect, a security against which, shall be pointed out

* About thirteen and a half inches, English.

† About twenty-seven inches, English.

‡ It appears that in the South, where it can be sown in March, it has been gathered during the first year.

at another time. As the seed is scattered over the beds, the rake is passed over them to render them perfectly smooth, and to recover the seed which may have fallen into the furrows. In England, the time for sowing woad is generally about the beginning of February, and in the South of France and Italy, towards the end of March and in autumn. Miller proposes to sow it towards the end of August. All those different modes of proceeding, arise from the difference of climates. If a light rain comes on after the seed has been sown, the woad succeeds the better. In a favourable season it shoots forth two little leaves in twelve or fifteen days, and two others in fifteen days more. As soon as it has four leaves the weeds should be carefully rooted up with a small hoe, and all the little clods which have not been broken by the rake, should be crushed, in order to enrich the roots of the young plants. As often as any weeds make their appearance, this hoeing should be renewed, until the maturity of the woad, which takes place about the middle of June.

The woad springs up more or less quickly in general at the end of from ten to twelve days; some put the seed to soak in water the night preceding the day they intend to sow it; others throw it over snow, which, as it melts, buries the seed of the woad; others sow it before a slight rain. The woad in its infancy, has the appearance of the *synoglose*, or hound's tongue; but at the end of a month or six weeks, it acquires strength and vigour. It shoots forth five or six leaves, which spring up. Then is the time to weed it with the hand, and destroy the parasitical plants, the stalks of the woad that are too numerous, and above all, the bastard woad, the mixture of which would be fatal to the real woad. When the woad is freed from weeds, the earth must be moulded with the loose soil, in order that the roots may receive the salutary influence of the atmosphere. This operation is to be repeated as often as possible until the harvest, and all the shoots of woad

which the roots, wounded by the point of the instrument, may have produced, are to be carefully destroyed.

In sowing the woad like spinage, according to Miller's plan, the weeding is effected more easily; the number of the stalks is diminished, so as not to leave them opposite to each other, and to establish between each stalk a distance of from six to eight inches. By diminishing the number of the stalks, the crop is not lessened, because the plants, having more space between them, give a greater number of leaves, and stronger ones than plants placed more closely together, which would droop for want of air and nourishment.

These weedings ought also to be repeated as often as possible until ten or twelve days before the harvest. The moment of the ripening of the woad ought to be watched with the greatest care, as, on vigilance in this respect depends the success of the crop. Those who wish to have the best woad ought not to gather the crop on the same day, because the upper leaves have not acquired an equal ripeness with the lower ones.

The leaves, as they ripen, hang down. It is to be observed, that the exact moment of ripeness ought to be seized, because, if the crop is left too long a time, the leaves become marked with yellow spots, which indicate that the quality of their juice is altered, and that it has lost its colouring power. The signs of maturity vary with the climates where the woad is cultivated.

In England and all the northern countries, the ripeness of the woad is known by the drooping leaf having attained its full growth, and by its greenish blue changing into a pale green. The woad is gathered by the hand like spinage, taking care not to injure the stem, which ought to produce new leaves.

This operation ought to be performed in fine weather, and with the sun sufficiently warm to evaporate from the leaves,

a humidity injurious to the formation and preservation of the woad. Great attention must be paid to separate the leaves from all other plants, and particularly from those of the bastard woad which may have escaped the weeding, and the leaves of the real woad which may have been injured by fogs, or which may have yellow spots. The greater or less heat of the season ought to decide the interval which should elapse between the different harvests. It is generally from thirty to five and thirty days. Care must be taken, after each crop to re-dig the earth near the stalks of the woad, and to weed with great exactness. Three crops may be obtained from woad of good quality. When the leaves of the woad have been gathered with the precautions above recommended, they are carried to the woad-mills, which being similar to those used for oil, need not be described. The leaves are ground in the mill, and formed into masses, which, in the South of France, are from three to five feet in length. In Italy they are made a little forked, and sharp backed. These masses are left to ferment during two days, after which they should be kneaded again. In the mean time care should be taken to close the apertures of the upper crust, to wet it with urine, or with the juice of the woad extracted by the mill, or with water; great care should be taken to keep the chinks exactly closed, as otherwise the interior fermentation would be diminished, and worms formed which would destroy the woad. These masses are left thus exposed to the air, night and day; if it rains they must be covered. Should the sun prove too warm, the same plan must be followed. At the end of a month these masses are again carried to the mill, ground, and formed on a mould (conically hollowed), in conical loaves of five inches in diameter, with ten inches in height, weighing generally three pounds. In the South of France they weigh but one pound; they are called "*cocques*," a provincial expression which means cakes. They are placed upon hurdles

raised about three feet above the earth, in a dry and airy place. The good balls are distinguished by their inside being of a violet colour, and having an agreeable odour: those which have been injured by the woad being gathered during the rain, have an earthy appearance in the inside, and a disagreeable smell; the mouldy and rotten ones have lost their substance and are light.

Here it is that the labours of the cultivator cease; when these cones are dry, he sells them to the wholesale merchant, who ought to make them undergo a new fermentation before he delivers them to the dyers.

Instructions on the art of extracting Indigo from the Leaves of Woad, (Isatis tinctoria) published in France, 1811, by order of the Count Montalivet, Minister of the Interior. Translated by the Author of the Report.

The culture of woad, and its use as a dye, have been known for a long time; but about the beginning of the seventeenth century, this plant appears to have supplied, for general use, the strongest, richest, and least expensive blue. At that time the discovery of the stain of the anile, or indigo of the Indies, and its importation into Europe, gave a deadly blow to the use of woad, and nearly annihilated one of the most fertile branches of our industry. The Governments, which foresaw that the result would be destructive to their agriculture and commerce, prohibited, under heavy penalties, the use of the Indian indigo; but its advantages were such, that after having resisted its introduction for some years, it was at length permitted, and from that moment the culture of woad was reduced to the one hundredth part of what, till then, it had been.

Before that period, merely in the dioceses of Alby, Thoulouse, Lavarre, St. Papoul, Montauban, Mirepoix, about

two hundred thousand cakes or balls of woad, of two hundred pounds weight each, were annually prepared, but by little and little that branch of industry has been solely confined to Lauragais, where they now prepare but about two thousand balls.

Normandy, Piedmont, Tuscany and Ombrie, lost this commerce in the same proportion.

It may not be useless here to account for the preference given commercially to the indigo of the Indies beyond the woad of our climates, by the very great facility with which it may be used. In fact, the indigo of the Indies has been cleared of every matter foreign to the dye, by previous operation; it presents its colouring principle at once. One pound of indigo is the produce of the process which has taken place, on one hundred pounds of the plant which contains it, whilst with respect to woad, such as is produced at the present day, the indigo remains with, and is as it were, lost in all the dregs of the plant; so that to obtain the effect of one pound of pure indigo, it becomes necessary to employ a great mass of other materials, which are mixed with it. Thus, the dyer who made use of woad was forced to fill his vat with a matter, almost all of which was deprived of the colouring principle; the handling of the stuffs was difficult, while steeping, the colour was unequal; and it was necessary to repeat the immersion twenty or five and twenty times, to obtain an even blue, and a sufficiently deep colour.

On the contrary, the person using the indigo of the Indies, purified by previous operation, might dissolve twenty or thirty pounds of it in his vat, without thickening the liquid too much; the stuffs might be handled there conveniently, he might obtain, in a little time, the precise colour, and might deepen it as occasion required.

With such advantages, it is not surprising that the indigo of the Indies has obtained a preference to the woad, and that the use of the latter has been nearly abandoned.

The European governments, instead of prohibiting the use of a substance evidently superior in its qualities, ought to have excited an enquiry into the means of extracting indigo from woad, and should have taken measures to put it in competition with that of the Indies. It was known that the colouring principle of the woad was as beautiful and as strong as that of indigo, and it appeared that there was only one more step to be taken.

During two centuries, some individuals, at different times and in divers places, have attempted to extract indigo from woad; they have obtained some satisfactory results, but commerce has not felt their effects, either because their researches were not followed up with sufficient zeal, or because the establishments were formed in Germany, where the woad appeared to contain two-thirds less indigo than in the South.

By a decree of the French government, of 1810, an appeal was made to all men of science, and rewards promised to those who should find out the means of extracting indigo from woad, by an economical process.

Industry thus generally roused, excited and encouraged, has presented results which, by degrees, have arrived at such perfection as to confirm to the country the certainty of possessing its native indigo. It is also in that part of the country where woad originally constituted the chief prosperity of its agriculture; in that part of the country whose produce was celebrated and sought for by all Europe, that these experiments have been followed up with the greatest activity and success.

At Rieti, M. Poteziani, and at Alby, M. M. Ronguez and Limousin, have exhibited a perseverance in their researches which merits the highest praise.

It remains only to make known the sure and easy process of extracting indigo from woad, which is the principal object of this Memoir. It is as follows:

First—The Choice of the Leaves.

The leaves of the plant are gathered when they are in their greatest vigour, before they begin to decay or turn yellow. The most favourable moment is when their edges appear coloured by a light tint of violet. They should be gathered in as short a space of time as possible, and should be immediately put to ferment, to avoid the deterioration of their indigo by their being previously heated. The leaves abound most in indigo when the season has been warm and dry.

The extraction of the indigo is more easily accomplished when the leaves have been gathered in fine weather.

The leaves which have been struck by the frost, are, nevertheless, capable of furnishing indigo, but the fermentation is slower, and the indigo less abundant.

When the grain of the woad has been sown in March, the first gathering may take place in June, and may be repeated every twenty or twenty-five days, according to the season.

It would be advantageous to let the crop stand for two years, because, in the second year, the first gathering might take place in the month of March, and by that means twelve or fifteen harvests might be had within the two years*.

Second—The Fermentation of the Leaves.

Upon pulling the leaves they are placed in ozier baskets, and those baskets are plunged in water to wash the leaves, and to get rid of all dust or earth that might adhere to them. They are then put into a vat of white wood†, where they are arranged so as not to be too close or too far asunder.

* It is apprehended, that this quick succession can only be expected in warm climates.

† Poplar, willow, &c.

Some planks are placed on the top of the leaves to prevent them from rising. The vat should be large enough to permit from two to four hundred pounds to be worked in it.

When the leaves are arranged in the vat, pure water is poured on them, so as to cover them two or three inches deep; and it is necessary to make use of water capable of dissolving soap without curdling it. When the weather is cold, it is better to bring the water into the work house, and not to use it till it shall have acquired a temperature of twenty or twenty-five degrees, by which means the fermentation will be quicker. The temperature of the house in which the fermentation is to take place should be as nearly as possible twenty degrees.

It is right to prepare the vat so that the fermentation may reach the crisis by day-light, not only to have the better opportunity of judging of the degree of fermentation, and of stopping it in proper time, but also for the better execution of the ulterior process, which would go on badly in the night. In summer, the fermentation is complete in eighteen or twenty hours; it is slower or quicker, according to the temperature of the place, and the liquid in which the operation takes place.

At first the water assumes a yellow colour; bubbles rise to the surface, which are at first white, then become of a copperish, and lastly of a blueish colour, by the contact and action of the air.

The water of the steep or bath becomes a little sour, and acquires a burnt taste. It becomes more and more coloured till it reaches a greenish yellow.

In general it is known that the fermentation has arrived at its proper degree, first, when the liquor has acquired a yellow colour, bordering on green; second, when the bubbles are changeable in colour.

But the surest method of knowing the moment at which

the fermentation should be stopped, is to put some of the liquor in a glass, and to mix with it, by little and little, some lime water. If, by this mixture, a beautiful and deep green colour is produced, and that a considerable number of deep green flakes are perceived in the liquid, it is to be concluded that the fermentation is at a crisis.

It is necessary, therefore, to try the liquor from hour to hour, from the moment the bubbles begin to appear, and to stop the fermentation as soon as an abundant precipitate of a dark green is obtained.

If it be continued long after the appearance of this symptom, the indigo itself becomes decomposed, and is procured in less quantity and of an inferior quality.

In general, it is better to stop the fermentation too soon, than too late. In the first case the indigo produced is of a beautiful quality, and if the leaves contain any more, it can be got at on a second fermentation, by following a similar process.

Third—*Precipitation of the Indigo.*

When the fermentation has arrived at the proper degree, and that the liquor exhibits the symptoms pointed out above, by turning a cock placed at the bottom of the vat, all the water is drawn off into another vat, double the size of the first, and covered with a bolting cloth, that the liquor may filter through, and rid itself of all impurities. Then, by little and little, lime-water is poured upon the liquor; the mixture is disturbed, and becomes a deep green.* In this

* It may be known that a sufficient quantity of lime-water has been poured in, by taking a little of the liquor, and filtering it into a glass, and by applying more lime-water to that. If no precipitation takes place, nor any change of colour, the quantity applied to the general mass has been sufficient. The lime-water consists of one part of roach lime to two hundred parts of water, poured clear off. Mr. Ronguez

stage, the indigo, mixed with the yellow matter, is suspended in the liquor, and forms there numerous flakes, which precipitate themselves when left to settle.

Fourth—Separation of the Indigo from the Yellow Matter.

When the mixture of the lime-water with the fermented liquor has produced the green precipitate which swims in the bath, there is nothing more necessary than to separate the indigo. Here those who have treated upon woad, differ as to the means. Some agitate the liquor strongly by an axle furnished with dashes, and worked by a handle which they turn with rapidity, till, upon looking at it in a glass, or on a delft plate, they perceive the blue grains of indigo swimming in it, and that the grain is well formed. The agitation gives rise to an immense number of bubbles, which rise sometimes three feet above the liquor, and which acquire a beautiful blue colour by the contact of the air. They take off this froth with care, and pour it into little shallow tubs of wood. They leave it in the air till it is well coloured, and then carry it into the drying-house. The agitation sometimes lasts but a quarter of an hour, but seldom requires more than two hours. It is often necessary to apply a fresh quantity of lime-water to hasten the precipitation of the indigo.

When the agitation has separated the indigo, they let the liquor rest. The indigo deposits itself, by little and little, in the bottom of the tub, and the liquor becomes clear and transparent. Another process for the separation of

uses another precipitant composed in the following manner: He takes eight pounds of roach-lime, and slacks it with a little water, then dilutes it with water in a tub, and after stirring it very much, lets it settle. He boils at the same time sixty-four pounds of wood-ashes (of fresh wood) in forty-six quarts of water, and lets it also settle. These two liquors mixed together, form a precipitant. This quantity is sufficient to work six hundred and fifty pounds of the leaves of the woad.

the indigo from the yellow matter, consists in letting the green precipitate which swims in the liquor, deposit itself. At the moment this deposit is formed, draw off the liquor from the top, and pour upon what has been deposited, some muriatic or sulphuric acid diluted with water*.

At the moment the blue unfolds itself, they stir it to facilitate the action of the acid on every part, they then pour in some water to wash the indigo, stir it again, and let it rest, and when the indigo is deposited, they draw off the water from the top.

This green precipitate brought in contact with the air becomes blue without the assistance of the acid; but this latter has the advantage of purifying the indigo from the lime mixed with it, and of facilitating the separation of the yellow principle. It is not to be doubted but by this latter method, a purer and more beautiful indigo is obtained than by the former.

To be certain that all the indigo which the liquor contained has been deposited, it is only requisite to put a little of the liquor into a glass, and to mix it with lime water. If no green precipitate is formed, there is no remaining indigo in the liquor; but if the case be otherwise, the water must be treated according to one or other of the processes just described.

It is possible that, by a first fermentation, the leaf has not been exhausted of all its indigo; and this happens especially when the fermentation has not been long enough continued. In this case, a second fermentation of the leaves may be made to take place similar to the former, but the indigo will be of an inferior quality.

* Water should be added, to bring the solution to two or three degrees by the aréometer of Beaumé, and this acid should be applied, till its mixture with the deposit yields a taste as sour as that of good vinegar.

Fifth—*The Drying of the Indigo.*

After having strained off all the water which was above the indigo, they put it into conical filters of linen lined with blotting paper. The indigo drains off and acquires a consistence. They then gather it with wooden knives, and put it in little troughs of white wood, whose bottoms are formed of linen cloth. They carry these troughs and frames into the drying-house, and place them upon sticks fastened to the wall.

The drying-house ought to be in the shade, and out of the current of air. The temperature of it should be from twenty to thirty degrees. When the indigo has acquired the consistence of a firm paste, they press it together with wooden knives. After twenty or thirty days, it will have acquired the proper consistence, when they divide it into small loaves or cakes for market. It sometimes happens, especially when the drying has been tedious, that some worms shew themselves in the indigo, which would consume it if not taken out with great attention.

Note.—One operation furnished to M. Poteziani of Rieti, thirteen pounds of indigo, which, after deducting every expence of culture, &c, &c. yielded two francs (twenty pence) net per pound.

M. Poteziani extracted of indigo, one pound three ounces, from one quintal metrique* of fresh leaves of the woad. M. Ronquez, of Alby, extracted from a similar quantity, one pound four ounces. M. Mohu of Dresden, only obtained five ounces of good, and eleven of bad quality, from a similar quantity of leaves, which proves that the southern climates are more favourable than those of the north, to the production of indigo.

* One quintal metrique is equal to 1 cwt. 3 qrs. 24 lbs. avoirdupois.

Finis.

Y 2

DESCRIPTION OF THE PLATES, AND DIRECTIONS TO THE BINDER.

PLATE I. to face the Title.

Map of Eastern and Western Flanders, divided into Eleven Districts.

PLATE II.

Map of the Polder of Snaerskerke page 13

PLATE III. 167

Fig. 1. The Trenching Spade. For the manner of using it, vide page 167.

Fig. 2. The Flemish Plough. For the manner in which it is worked, vide page 228.

Fig. 3. Lower side of the Mouldebaerte.

Fig. 4. Upper side of Mouldebaerte, strongly ironed. For the uses of this implement, vide page 115.

Fig. 5. A Tool for stirring the earth by hand, and for weeding.

PLATE III*. Enlarged View of the Mouldebaerte 115

In this Plate, the Artist has represented the handle a little too long, and the chains too short: upon being inverted, the handle should rest upon the Swingle-tree bar.

PLATE IV. 217
Front view of the Flemish Forge.

Fig. 1. An unoccupied Stall in the Forge, with a moveable bar, to be put in after the Horse is admitted; and to which the pastern is to be made fast.

Fig. 2. A Stall in the Forge, occupied by a Horse secured by a cable across his hams, previous to his being shod.

Fig. 3. A Stall in the Forge, occupied by a Horse with his hind foot tied to the bar, to be shod.

PLATE V. Side View of a Flemish Forge, to face page 218

Fig. 1. Side View of a Stall in the Forge, occupied by a Horse with his fore foot fastened to the Side Rail, to be shod.

Fig. 2. Side View of a Stall in the Forge occupied by a Horse with his fore foot fastened to a Stilt, to have the nails clinched.

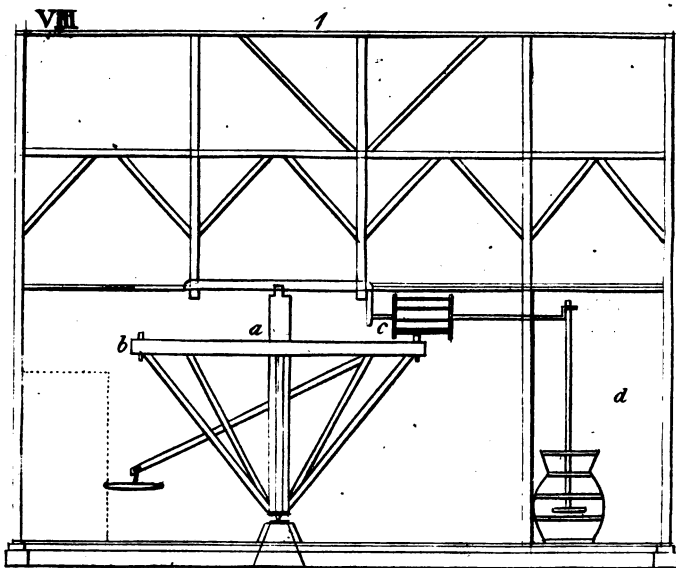
a, A Chain hooked across the neck, to prevent the Horse from rising (the *a* is omitted in the plate).

b, A moveable Stilt which runs along an Iron Bar in the front of the Stall, to support either of the fore feet, for the purpose of having the nails clinched.

c, A Roller, with Hooks to take the Rings of the Girthweb Cradle, by which, in case of vice, the Horse is raised from the ground in a few turns, by lever, working in the holes *d, d*. The Levers used are the Forge Pokers.

e, Side View of the Iron Supporters of the Bar to which the hinder foot of the Horse is fastened at the time of shoeing.

N. B. This Figure is not intended to represent part of a double Forge, as might be supposed from the position of the horses, but it is merely introduced to shew the manner in which the foot is secured for clinching the nails.



Churning Machinery.

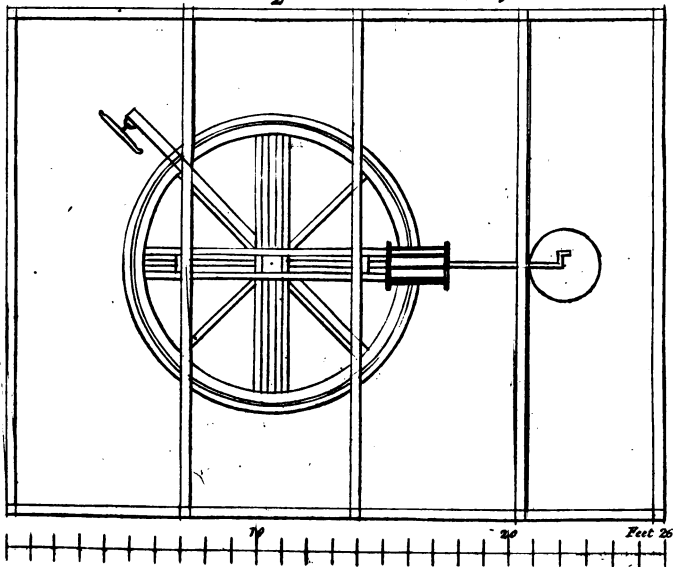


PLATE VI. Ground Plan of a Dutch Barn, to face page 197

Fig. 1. Longitudinal Section of a Dutch Barn.

a, a, a, a, a, a, Open Joists for taking off the pressure of the Sheaf Corn.

Fig. 2. Ground Plan of Dutch Barn.

a, A Threshing Floor.

b, A second Threshing Floor.

c, d, Areas for Sheaf Corn, with upright pillars to support the Joists.

e, f, Stables.

PLATE VII. Section of a Dutch Barn, to face page 199

Fig. 1. Transverse Section, or Gable End of Dutch Barn.

a, A Loft over the Stable, for Forage.

b, Stable Door.

Fig. 2. The Gable of the Horse-walk for Churning by Machinery.

PLATE VIII. Churning Machinery, to face page 327

Fig 1. A Section of that end of the Barn, the lower part of which is arranged for Churning Machinery.

a, The Upright Shaft.

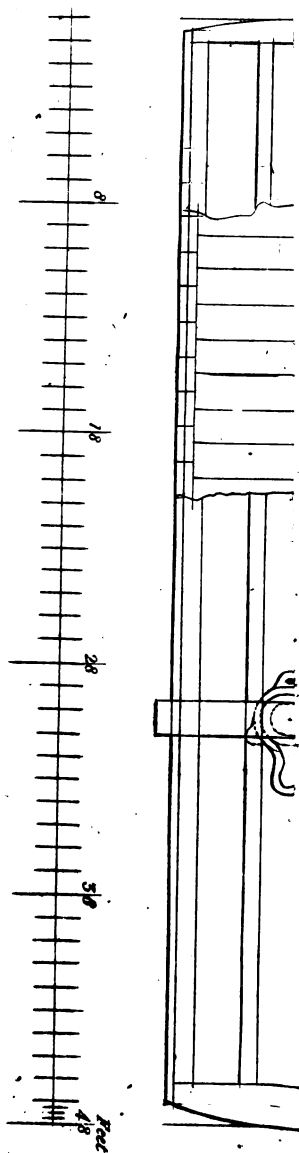
b, The Horizontal Wheel.

c, The Spur Nut, which works the Churn-dash by a Crank.

d, The Churning Apartment, separated by a partition from the Horse-walk.

Fig. 2. View of the Horizontal Wheel, &c. in the Horse-walk.

PLATE IX. The Kylanderie, to face page 230**FIG. 1. Rear View of the Kylanderie.***a*, The Staff which supports it.**FIG. 2. The Front View of the Kylanderie.***a*, The Hopper.*b*, The Wire-Work.*c*, *d*, The Cross Rails to prevent the descent of the Corn from being too rapid.*e*, The Trough or Box for receiving the clean Corn.**Fig. 3. A side View of the Kylanderie.****PLATE X. The Chariot, to face page 232****A View of the *Chariot*, or Farmer's Cart of Flanders; of the Flemish Horses, harnessed in the usual manner; and of the Farmer and Farm Servant in the costume of the Country.****PLATE XI. The Pivot Bridge, to face page 328****Fig. 1. A View of the Pivot Bridge.***a a*, Iron Railing.*b b*, Side Plank of Frame.*c*, Additional Plank in which the Socket is fixed.*d*, The Stone in which the Pivot is fixed.*e*, The Platform of Mason-work.**Fig. 2. The Pivot.****Fig. 3. The Socket.****Fig. 4. The Windlass, which receives the Rope fastened to the extreme end of the Bridge.****Fig. 5. A View of the under frame-work of the Bridge, with the Position of the Socket in which the Pivot works.**



These Bridges are unexpensive in the principle, and in the necessary attendance. They might turn to good account on the Canals of Ireland, and might be applied both ornamentally and usefully, in such demesnes as happen to be intersected by a river not too wide.

A Bridge of this description, across the chief Canal in Bruges, where the most frequent passing of vessels takes place, is worked by a girl of fourteen years of age, for 4*d.* a day. The time required to open or to close it, is but a minute and a half.

BOOKS ON RURAL AFFAIRS,

PUBLISHED BY

J. HARDING,

Bookseller, 36, St. James's-Street.

1. **FACTS and OBSERVATIONS** respecting CANADA and the UNITED STATES of AMERICA, affording a Comparative View of the Inducements to Emigration, presented in those Countries. To which is added, an APPENDIX of Practical Instructions to Emigrant Settlers in the British Colonies. By C. F. GREGE, Member of the Agricultural Societies of Montreal and Quebec; Author of Essays on Husbandry, addressed to the Canadian Farmers, 8vo. Price 7s.

* * This Publication, the result of many years' experience, both in the United States and in Canada, embraces a variety of topics of great interest to those whose views may be directed to a residence in those countries, and indeed to all who desire information upon the subject. The Author, a Practical Farmer, relates his plain unvarnished tale for the benefit of those who may be inclined to profit by his experience in the cultivation and management of crops, little, if at all, known in England.

2. **PRACTICAL DIRECTIONS** for LAYING OUT and MAKING ROADS, illustrated by a Plate, by JAMES CLARKE, Land Surveyor, 8vo. Price 2s. 6d.
3. **AN INTRODUCTION** to GEOLOGY, illustrative of the general Structure of the Earth; comprising the Elements of the Science, and an Outline of the Geology and Mineral Geography of England; a New Edition, enlarged; by ROBERT BAKEWELL; in 8vo. with Plates. Price 18s.

* * This Work contains the result of the Author's inquiries, during an examination of various parts of England and the Eastern Coast of Ireland, since the appearance of the former Edition. It also gives an account of the most important

Books on Rural Affairs, published by J. HARDING.

Geological Observations which have recently been made on the Continent of Europe, and in various parts of the globe, and has several new Plates and Illustrations; the whole intended to give a view of the progress and present state of the Science.

4. A DISSERTATION on LIME, and its Use and Abuse as Manure in Agriculture, including a View of its Chemical Effects, by THOMAS HORNBÝ, York, 8vo. a New Edition. Price 2s.
5. ESSAY on the ECONOMY of FARM-YARD MANURE; on ROAD-MAKING, and on other Rural Subjects, by F. BLAİKIE, Steward and Agent to THOMAS WILLIAM COKE, Esq.; a New Edition. Price 1s. 6d.
6. ESSAY on the Conversion of ARABLE LAND into PASTURE, the Cultivation of TURNIPS, and other Subjects of Rural Economy, by F. BLAİKIE; New Edition. Price 1s. 6d.
7. REMARKS on the IMPROVEMENT of CATTLE, in a Letter to SIR JOHN SEBRIGHT, Bart. M. P. by Mr. JOHN WILKINSON of Lenton, near Nottingham, 8vo. Price 2s.
8. SIR JOHN SEBRIGHT'S LETTER to SIR JOSEPH BANKS, on the best Mode of Improving the Breeds of Domestic Animals, 8vo. Price 2s. 6d.
9. MORLAND'S GENEALOGY of the ENGLISH RACE-HORSE, with Remarks on the present System of Breeding Blood-Horses for the Turf, &c. and Instructions for the Management of Brood-Mares and Colts, with Plate, 8vo. Price 12s.
10. ESSAYS on the MANAGEMENT of the DAIRY, including the Modern Practice of the best Districts in the Manufacture of Cheese and Butter, founded on thirty years' practice, by J. TWAMLEY and others; a New Edition, enlarged. Price 7s.
11. THE FARMER'S ACCOUNT-BOOK for 1819; a New Edition, improved. Price 21s. for a Year, or 10s. 6d. for Half-a-Year's Book.

- * * This Work is a Collection of Forms ruled, for keeping the Accounts of a Farming Establishment of magnitude, and being founded upon long experience in rural management, will prove highly useful to Landholders, Farmers, Stewards, &c. Continued annually.

Books on Rural Affairs, published by J. HARDING.

- 12. FARMER'S MEMORANDUM BOOK** for 1819, 4to. Price 10s. 6d. for a Year.

* * This is an Abridgment of the above Work, and contains a Selection of the most useful and easy Tables, adapted to the Business and Accounts of a small Farm.

- 13. THE WORKMAN'S ACCOUNT-BOOK**, ruled, for keeping a regular Account of Labour and Wages, printed on writing-paper. Price for a Year's Book, 12s.

- 14. THE DAIRY ACCOUNT BOOK**, for Keeping an Account of the Produce and Consumption of a Dairy for a Year. Price 6s.

- 15. A COMPARATIVE VIEW** of the relative Produce per Acre, and Value of Land, in England, Scotland, and Ireland, applicable to various processes of Husbandry, and adapted to the different measures prevailing in the three Kingdoms; printed on a Card. Price 6d.

- 16. BLYTH'S ENGLISH IMPROVER IMPROVED**, or SURVEY OF HUSBANDRY; discovering the Improveableness of Lands, &c. &c. 8vo., with Plates.

* * This Work, originally printed in 1652, and dedicated to Cromwell, is very curious, for the information it affords respecting the state of English Husbandry at the time of its publication; but independently of this, it deserves to be better known, on account of the many excellent Remarks and judicious Instructions with which it abounds, not inapplicable to the Agriculture of the present day. A new Edition nearly ready.

- 17. LOUDON'S ESSAY** on the CONSTRUCTION of PAPER ROOFS, recommended for elegance, durability, and economy, in Agricultural Buildings, with a Plate. Second Edition. Price 2s.

- 18. OBSERVATIONS** on LAYING-OUT FARMS in the SCOTCH STYLE, adapted to England, and Remarks on the Importance of the Berwickshire System of Management to the general improvement of Landed Property, by J. C. LOUDON, F. L. S. folio. Price 3l. 3s., or with Coloured Plates, 5l. 5s.

* * This Work is illustrated by thirty-eight Plates, descriptive of Farm-Buildings, Machinery, Plans for Road-making, Embanking, and other Rural Improvements, in Villas, Gardens, Farms, and Pleasure-grounds.

- 19. A COLLECTION** of DESIGNS for RURAL RE-

Books on Rural Affairs, published by J. HARDING.

TREATS, COTTAGES, and VILLAS, principally in the Gothic Style of Architecture, with their Plans laid down to a scale, and other Appendages including copious Descriptions, by **JAMES MALTON**, Architect, 4to. Price 2l. 12s. 6d.

- * * This Work contains thirty-four Plates and Plans of great beauty and variety, adapted to different purposes, and the Descriptions which are full and complete, form a useful body of information on the Design and Execution of Rural Buildings, according to the object for which they are intended.

20. **DIRECTIONS for CULTIVATING the CRAMBE MARITIMA, or SEA-KALE**, for the use of the Table, by **WILLIAM CURTIS**, with a Coloured Plate, 8vo. Price 2s. 6d.
21. **THE FLORIST'S DIRECTORY, or TREATISE on the CULTURE of FLOWERS, BULBOUS ROOTS, &c.** including a Dissertation on Soils and Manures, by **JAMES MADDOCK**, Florist; a New Edition, enlarged by **CURTIS**, with eight Coloured Plates, representing the different Flowers, and descriptive of Horticultural Implements and Processes used in the Management of a Garden, 8vo. Price 1l. 1s. Coloured. A few Fine Copies on large paper, Price 1l. 11s. 6d.
22. **THE FOREST-PRUNER and TIMBER-OWNER'S ASSISTANT**; or a Complete Practical Treatise on the Training and Management of British Timber Trees, whether intended for Use, Shelter, or Ornament; including an Examination of the properties of English Fir Timber, and a New System for the Management of Oak Woods, &c. &c. by **WILLIAM PONTEY**, Nurseryman, Planter, and Forest-Pruner to the Duke of Bedford, 8vo. with Plates, Third Edition. Price 12s.
23. **PONTEY'S PROFITABLE PLANTER**; a Theoretical and Practical Treatise on Planting in every Description of Soil and Situation, particularly those which are most difficult, as elevated Sites, Barren Heaths, Rocky Soils, &c. including Hints on Shelter and Ornament, 8vo. with a Plate of Implements for Planting, invented by the Author. Fourth Edition, enlarged. Price 10s. 6d.
24. **HINTS ON PLANTING**, by **WILLIAM PONTEY**;

Books on Rural Affairs, published by J. HARDING.

being the Substance of the Additions made to the Fourth Edition of *The Profitable Planter*, and published separately, for the Accommodation of the Purchasers of former Editions of the Book, 8vo. Price 3s.

25. **DESCRIPTION** of an **IMPROVED METHOD** of **DELINEATING ESTATES**, combining Mathematical Accuracy with the Beauties of Landscape Painting; and representing not only the Estate itself, but the adjacent Country, in Panoramic Perspective, by T. HORNOR, Land-Surveyor, 8vo. with Plates. Price 10s. 6d.
26. **TULL (JETHRO) HORSE-HOEING HUSBANDRY**; or an Essay on the Principles of Vegetation and Tillage, designed to introduce a New Method of Culture, whereby the Produce of the Land will be increased, and the usual Expences lessened, 8vo. A New Edition preparing for the Press.
27. **A REPORT** on the **AGRICULTURE** of **EASTERN and WESTERN FLANDERS**, made under the Authority of the **FARMING SOCIETY** of **IRELAND**, by the Rev. **THOMAS RADCLIFF**, 8vo. with Plates.

* * In this Work, which is dedicated to **EARL TALBOT**, with his Lordship's permission, the Reporter examines the Provinces of Flanders in Eleven Divisions, and gives minute details respecting the peculiar Husbandry practised in each. Among much other matter, highly interesting to the British Farmer, the Book will be found to comprise the chief varieties of *Flemish Rotations*, according to the variations of the soil; and in treating of the quantity of Seed and Produce, as well as the application of Manure, the Weights and Measures are uniformly reduced to the standards of Great Britain and Ireland. The Appendix contains some valuable Documents respecting the culture and preparation of Flax, Woad, and Indigo; the production of Sugar from Mangel-Wurzel; a Sketch of Dairy Management in Holland; a View of the French Metrical System; and a variety of other subjects, interesting to the Agriculturist;—the whole accompanied by Maps and Plates, descriptive of Implements, Machinery, Farm-Buildings, &c. &c.

28. **SYNOPSIS PLANTARUM SUCCULENTARUM**, cum Descriptionibus, Synonymis, Locis, Observationibus Anglicanis Culturaque. Auctore, A. H. HAWORTH, F. L. S. &c.

* * A Supplement to the above Work, containing the Additions

Books on Rural Affairs, published by J. HARDING.

and Alterations since the publication of the Synopsis in 1812, embracing Observations on some other classes of Plants, is just published, price 6s.

29. **THE AGRICULTURE of a DISTRICT in the SOUTH OF FRANCE**; translated from the French of the Baron PICTET DE LA PEYROUSE, with Notes, by a late Traveller in France, in 8vo. Price 6s.

. This little Tract, interesting from the details it exhibits of the System of Husbandry pursued by our neighbours, has further claim to attention from the Notes which accompany it, made on the spot by an intelligent Agriculturist.

30. **AN ACCOUNT of the STRATA in the NORTH OF ENGLAND**, with a Section and other Illustrations. By Mr. WESTGARTH FORSTER.

. A new Edition of this Work, with Additions, is in the press.

31. **OBSERVATIONS on the WEST INDIA ISLANDS, MEDICAL, POLITICAL, and MISCELLANEOUS.** By JOHN WILLIAMSON, M.D. Fellow of the Royal College of Physicians, Edinburgh, formerly Surgeon to the Caithness Highlanders, and of Spanish Town, Jamaica, 2 vols. 8vo. Price 1l. 5s.

. The testimony of Dr. W. is valuable, from his peculiar opportunities of knowledge.—*Edinburgh Review*, Aug. 1817.

We recommend these volumes, as containing a valuable collection of facts relating to the Diseases of Jamaica, and the prophylactic regimen to be adopted by Europeans going to tropical climates. The volumes contain, besides the Author's Journal, several interesting Essays relating to the moral condition and treatment of the Black population in the islands.—*Edinb. Med. Journal*, Oct. 1818.

32. **HARDING'S NEW CATALOGUE of BOOKS on AGRICULTURE and RURAL ECONOMY**, including Works on Planting and Gardening, Landscape Gardening, Sporting, &c. on the Veterinary Art, and on various other subjects relating to Rural Affairs, 8vo. Price 2s.

DIRECTIONS TO THE BINDER,

FOR PLACING THE PLATES.

Map of Districts, to face the Title-page.

Plate II. to face page	13
III. ditto	167
III.* ditto	115
IV. ditto	217
V. ditto	218
VI. ditto	197
VII. ditto	199
VIII. ditto	327
IX. ditto	230
X. ditto	232
XI. ditto	328

The Plates having been numbered inaccurately, the particular attention of the Binder is required to place them with care, to face the pages pointed out in the List.

ERRATA.

- Page 4, and throughout, *for mesure, read mesure*, without the accent.
- 12, line 3, *for flow, read throw*.
- 31, in the Note, *for 40, read 38*.
- 33, line 2, *for hands, read hand*.
- 43, — 2, *for Wimple, read Winkle*.
- 48, — 3, *before capable, insert is*.
- 49, — 12, *for stack, read stuck*.
- 90, add a Note—that “The cart of urine contains 17 tonneaux, and the tonneau 38 gallons.”
- 158, line 9, *for 3½, read 6½*.
- 174, — 3, *after peasantry, insert of the farmers*.

